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ABSTRACT

The purpose of this collection of selected papers is to provide the reading teacher and the classroom teacher with usable information concerning remedial reading and its diagnosis and correction. The first section, concerned with the why of reading problems, reviews the various factors associated with reading difficulties. The second section presents a series of papers concerned with informal diagnostic procedures. The history of informal inventories is reviewed, and strengths and weaknesses are analyzed. The third section contains papers related to the correction of reading problems in the classroom, including those of inner city schools. The fourth section discusses remedial programs that are the province of the reading specialist working outside of the classroom. (Author/WR)

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READING DIFFICULTIES:
Diagnosis, Correction, and Remediation

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Foreword

THE THEME of the Kansas City Convention was *Challenges and Opportunities in Reading*. A volume concerned with the diagnosis, correction, and remediation of reading difficulties is certainly an appropriate product of a convention concerned with such a theme.

Professor Durr selected the papers to be included in this volume with the classroom teacher and the reading teacher in mind. The first group of papers are concerned with the *why* of reading problems as they review the various factors associated with reading difficulties.

The second section presents a series of papers concerned with informal diagnostic procedures. The history of informal inventories is reviewed and strengths and weaknesses are analyzed. The current interest in informal diagnostic procedures makes this a timely discussion.

The third section contains papers that relate to the correction of reading problems in the classroom, including those of the inner-city schools.

The fourth section discusses remedial programs that are the province of the reading specialist working outside of the classroom. These are the problems that are a major source of frustration to the classroom teacher and which are of concern to those who are interested in more complex learning problems.

Professor Durr's selection of papers is well-balanced and will serve the intended audience well.

LEO FAY, *President*
International Reading Association
1968-1969

The International Reading Association attempts, through its publications, to provide a forum for a wide spectrum of opinion on reading. This policy permits divergent viewpoints without assuming the endorsement of the Association.

Introduction

IN THE DISTANT PAST of undergraduate days, I envisioned a time when there would be no reading difficulties. And, with the ease of a person who understands a complex issue only slightly, I thought that this day might be near.

Now, much later and, hopefully, a little more knowledgeable, I realize that the problems which seemed simple in my naiveté, really are not simple at all. The more we know about factors associated with learning to read, the more we realize the complexity of the problems involved.

Since reading involves complex processes and since human beings who are called upon to master reading are, themselves, infinitely complex, we have pupils with reading difficulties. This book offers no easily applied answers. Added knowledge does not simplify and lead to an easy way out for us. This book does, however, illuminate the problems and suggest paths to solutions. And to the extent that we have more information about students and reading, we are more likely to reach higher levels of achievement in successfully bringing students and reading together.

The outstanding educators who have made this publication possible provide the total book with a balance of theory, research, and suggestions for practical application that can lead to greater success as we help children with reading troubles. The theoretical postulates examined suggest general directions for our efforts with children. The research reported provides an experimental basis for strategies we use or should try. And the suggestions for practical application offer the specific operational techniques that we should critically evaluate and try when that evaluation promises successful adoption.

The ultimate goal of this book is to improve reading achievement for students. This can only be reached through your efforts as you examine, analyze, and use the ideas. The goal is worth the effort.

WILLIAM K. DURR

FACTORS ASSOCIATED WITH READING DIFFICULTIES

Causes of Reading Difficulties— Facts and Fiction

LAWRENCE M. KASDON
Ferkauf Graduate School

AS WE EXAMINE the literature of causes of reading difficulties, we feel as if we are one of the six blind men who described the elephant. Sometimes it seems as if we have had a corneal transplant only to discover that the cause of the blindness is not the clouded cornea. Instead, it is a lesion in the brain that not only interferes with sight but with reason.

Let us begin exploring our mythical elephant, remembering that we shall not be able to see him and hope that the lesion does not affect our thinking processes. The blind men in our poem were fortunate, because they knew that they were trying to describe a single animal, an elephant. Those of us who work in the area of remedial reading sometimes feel as if we are as blind as the wise men, as far as our state of knowledge goes. Sometimes we believe that we are attempting to deal with an entire menagerie. Yet there are many dedicated investigators who insist that we are only dealing with an elephant. What confounds our problem even more is that the wise men who write about reading may specialize in ophthalmology, pediatrics, neurology, linguistics, psychology, education, or literature.

Direct Causes Are Difficult to Identify

A Tower of Babel exists about terminology that makes it difficult to know if people speaking and writing about reading difficulties are really communicating. In commenting on this situation, Harris (*14*:159-161) writes, "Thus a child may be labeled a case of reading disability or deficiency, a retarded reader, an underachiever in reading, a case of specific or developmental dyslexia,

a case of specific language disability, or perceptually handicapped. The one common element among these terms is the agreement that the pupil's progress in reading is unsatisfactory in terms of his potential. Beyond this, there is wide disagreement not only regarding terminology but also on the significance of various etiological factors and on the appropriateness and efficacy of different methods of treatment." Thus, we cannot even enjoy playing the great American game of labeling something and thereby thinking that we know what that something is.

I agree that there is no one label that is appropriate for all individuals whose reading progress is unsatisfactory in terms of their potential. At the risk of contradicting myself, I shall, in this paper, refer to such individuals as underachievers in reading, regardless of what other problems they may or may not have.

Let us briefly examine one of the better known attempts at categorizing remedial reading cases. Rabinovitch (*20*:74-75) suggests three major categories that have grown out of his diagnostic studies:

1. *Primary reading retardation,* where the cause is biological, and there is no brain damage. "The defect is in the ability to deal with letters and words as symbols, with resultant diminished ability to integrate the meaningfulness of written material. The problem appears to reflect a basic disturbed pattern of neurological organization."

2. *Secondary reading retardation.* The child possesses normal capacity to learn, but this capacity has been vitiated by such external factors as emotional blocking, psychoses, and limited opportunity for schooling.

3. *Brain injury with reading retardation.* "Capacity to learn to read is impaired by frank brain damage manifested by clear-cut neurological deficits."

These appear to be such clear-cut categories that, at first, we feel at last we can classify our reading underachievers into neat categories. Rabinovitch continues, "It is more difficult to be certain into which group a particular case fits than it is to recognize that there are three groups."

Perhaps the best formulation of causes of underachievement in

reading was described over 20 years ago by Helen Robinsin (*24*). She attempted to identify and measure the various causal factors in a group of 22 severely retarded readers. Robinson acted as psychologist and reading technician and obtained the help of a number of specialists: a social worker, a psychiatrist, a pediatrician, a neurologist, an endocrinologist, and a reading specialist. She based her conclusions as to whether or not a given anomaly was causal if, upon correction or use of appropriate compensations, improvement in reading resulted. Robinson found that maladjusted homes or poor interfamily relationships were contributing causes in 54.5 percent of the cases. Visual anomalies were found in 73 percent of the 22 cases, but were considered causes of reading failure in only 50 percent of these cases. There were significant emotional problems in 41 percent of the 22 cases studied, with 22 percent causal. Inappropriate teaching methods appeared to be the cause of reading failure in 18 percent of the 22 cases (*24*:226).

Alexia or some other neurological problem was considered a cause of reading failure in 18 percent of the cases. Because of the current interest in neurology and reading it is interesting to note what Robinson wrote in 1946:

> The present study shows that many pupils who had made little or no progress in learning to read before this diagnostic study, were not victims of alexia in the judgment of the neurologists. Moreover, a few cases diagnosed as alexia made progress beyond the level expected of a child with such a handicap.

Speech and functional auditory factors were found to be contributing causes of reading disability in 18 percent of the 22 cases; dyslalia (an articulatory defect) was considered a cause in 14 percent of them.

Robinson (*24*:220) concluded that those most seriously retarded in reading evidenced the greatest number of anomalies, whereas the least retarded presented the fewest. Another of Robinson's conclusions is important to bear in mind when reading studies about the causes of reading difficulty: when a group of specialists tried to evaluate the anomalies for each subject, certain of the anomalies had no direct relationship to the reading problem.

Furthermore, there was not complete agreement among her experts as to which factors caused reading retardation. Today there is still lack of agreement among experts.

Robinson's study provides many valuable clues, but, because of her small sample and her research design, her results must be regarded as tentative. It is most unfortunate that someone has not done a follow-up study. The disagreement concerning the potency of various causes reported in the findings of Robinson's study was reinforced by different investigators. Such disagreements may stem from the research design used by the various investigators, as well as from the nature of the population studied. Other factors that might account for differences in findings are teaching methods and socioeconomic status. Disagreement may also be due, in part, to the use of different tests and varying norms. For example, in Robinson's study the ophthalmologist considered that hyperopia (farsightedness) of less than +1.50 diopters did not need correction, whereas Eames (*11*:10-13) maintained that hyperopia between +0.50 to +1.50 diopters needed correction.

Bearing in mind that studies of apparent causes of reading retardation are of limited value if they are not checked out experimentally, that we must have valid instruments for our research, that we must agree on our norms, and that our samples must represent some known universe, we still have problems. First, there is Robinson's finding that those most retarded in reading evidenced the greatest number of anomalies. Even if we thought we knew all of the causes of reading failure, these causes rarely occur in isolation; consequently we get an interaction effect. For example, if a child has emotional problems, suffers from binocular incoordination, and was brain damaged at birth, all of these in combination may be a greater handicap in learning to read than if any one occurred singly. Second, with our present state of knowledge we are not certain we can measure some of these anomalies. Maybe the brain damage can account for the emotional problem; or was the emotional problem caused by reading failure? Perhaps there has been a self-remission of the brain damage but the child still behaves as if he were brain damaged. His condition may be further aggravated by the fact that his first grade teacher excused herself

from trying to teach him to read because he was such an obnoxious little brat with a damaged brain and, you know, no one can be expected to teach such a child anything.

How many etiological factors do we have operative? How much are they interacting to produce different effects than any one would have by itself? Would the teacher have tried to teach the child to read if he had not been obnoxious, although still brain damaged? Would she have been able to use the appropriate methodology? We cannot answer these questions.

When we attempt to get at causes of retardation in reading we typically study cases such as the one described above when they are from 9 to 20 years of age. We are working from effect and trying to find causes; this type of research is known as *ex post facto* research. *Ex post facto* research has severe limitations for the generation of explanations. Because of these limitations we can expect that this methodology would result in disagreement and contradictions. [For a more complete discussion of *ex post facto* research see Kerlinger (*18*, Chapter 20)].

Some Physical, Intellectual, Emotional, and Educational Factors

Let us consider briefly some specific physical "causes" of reading difficulties. Probably the most comprehensive study on childbirth and reading was made by Kawi and Pasamanick (*17*). These two researchers found that a number of conditions differentiated a group of underachievers in reading from so-called normals: 1) premature births, 2) toxemias of pregnancy (preeclampsia, hypertensive disease), and 3) bleeding during pregnancy (before third trimester, placenta praevia, premature separation of the placenta).

Let us examine the role that vision plays in reading. In a number of studies, specific visual defects have been reported as having a negative effect on successful reading: farsightedness, astigmatism, binocular incoordination, and fusion difficulties (*23, 28*). Parents are given a false sense of security when they rely on the visual test (the Snellen or big E) typically administered in most schools. It is useful as a screening device for truck drivers, but not for reading problems. The Snellen eye chart primarily identifies people who are nearsighted. As a matter of fact, nearsighted pupils tend

to be better readers than those who are farsighted (*27*:18). Vision testers often miss important visual handicaps by making their tests at 20 feet rather than at the reading distance. Visual acuity at a reading distance is often different from far point visual acuity (*11*).

Another of the fictions about vision is that kindergartners' eyes are too immature for them to start to learn to read. Eames (*11*) found children at five years of age had more accommodative power than at any subsequent age. The poorest *near* visual acuity found among the pupils studied was quite sufficient for reading the usual texts. It must be for other reasons than vision that reading should not be taught in kindergarten.

Research on the relationship of specific visual anomalies to reading disability are contradictory. Some of these contradictions may be explained in part in terms of the ability of the child to compensate for the defect, the age of the child, his emotional make up, or they may indicate a central dysfunction which is reflected in the motor responses. "Visual factors may be directly related, contributory, or coincidental to the reading disability. The relationship of patterns of visual defects to visual perception and to specific reading disabilities needs to be studied further" (*27*:20).

Poor hearing, while relatively infrequent in reading disabilities, may be very important when it occurs. There is some evidence that children with high frequency losses tend to fail in the primary grades (*16*). A large proportion of the consonant sounds such as *p, s, t, b, k, v, c, fl, s, th* are found among the high tones (*25*:113).

In addition to auditory acuity for learning to read are auditory memory and auditory discrimination, which are also necessary for progress in word recognition (*29*). Walters and Kosowski (*28*) indicated that unless retarded readers are highly motivated, they may pay less attention to reading because auditory discrimination requires so much effort on their part.

We can say with some assurance that reading underachievers frequently show marked deficiencies in auditory discrimination; consequently, giving them a heavy dose of phonics in the beginning stages of remediation may, in certain cases, aggravate the situation.

Endocrine gland defects and deficiencies are less common

among underachievers in reading, but when present create severe problems if left untreated. Eames (*11*) reports that the majority of his endocrine reading difficulty cases are of the hypothyroid type, especially mild to moderate cases which had been undetected for some time.

The debilitating effects of chronic poor health require careful evaluation. Malnutrition, asthma, and rheumatic fever may be involved with reading problems. Any condition resulting in lowered energy may interfere with concentration and effort in learning to read (*15*).

Intellectual Factors

Now let us briefly look at intellectual and emotional considerations. A nice way to avoid teaching a child to read is to decide that the child is stupid. Most of the group intelligence tests beyond third grade require the pupil to read, and, if he can't read the test, he will get a low score, particularly on the verbal part (*19*). If the child receives no help with his reading, he will continue to do poorly on group intelligence tests, in terms of his own ability, as he advances through the grades. Secondary school teachers or counselors may fail to realize that a mediocre verbal score on a group intelligence test might be influenced by poor reading achievement. If this is the case, the pupil may be counseled out of aspiring to go to college.

Two years ago twin brothers were brought to our reading clinic because they were not doing as well as their peers at a well-known suburban high school. Their older brother and sister were always honor pupils, but somehow the twins were never able to do top-notch academic work. The records from the school showed their IQ's to be at the low end of the normal range on a paper and pencil test. The school counselor had recommended the twins be prepared for a trade. We administered an individual intelligence test to the twins and they scored at the 99th percentile. We told the twins, their mother, and the school counselor of our findings and began remediation. Within one semester we had them functioning well above grade level in reading and study skills. As part of the study skills instruction we taught them how to beat the system. The following

year they were placed in the top section of the academic track.

Another question relating to a child's ability to learn to read that is often asked is, "Are there some children who are more hand-minded than eye-minded?" The answer is, "Yes." The corollary question is usually, "Are such children stupid?" The answer within the context of remedial reading is, "No." There is a substantial proportion of children seen at reading clinics who have convinced themselves, through repeated failure in learning to read, that they are dumber than their peers. Sometimes this self-concept is fostered by parents and teachers. In a sound remedial procedure one of the first things the clinician must do is to convince the student that he can learn to read. In some instances, the clinician has a difficult time convincing the student that he is not stupid.

Let us return now to the first question since it is an important one and deserves more than a "yes" or "no" answer. I would estimate that about 85 percent of the children of normal intelligence can learn to read by almost any reading method currently in use in the public schools. The remainder will have difficulty in learning to read for all of the reasons discussed here (plus some others which space does not permit us to discuss). In addition, they may have specific styles of learning to read which evidently were not used with them.

One of the important aspects of a diagnosis is to discover how the child can learn; this is particularly true with severely retarded readers or nonreaders. Among these severely retarded readers and nonreaders there are some who seem to be able to learn best with their hands; that is, using their fingers to trace the words while saying them. This method is called the Fernald Kinesthetic technique. Of course, tracing is merely the beginning stage of the treatment, and as soon as possible we eliminate the tracing.

A further question frequently asked by parent groups is, "Do some children have a mental block toward learning to read?" I suppose most of us have mental blocks toward things that we don't do well. In addition, there may be other dynamics at work that my colleagues in psychiatry could supply. It may be that some children use failing to learn to read as an attention-getting device. Have

you ever heard some teachers express concern about a child who is not learning to read? Most teachers are quite dedicated and I am sure that at the beginning of each school year practically every elementary school teacher in the United States vows that she will have every child in her classroom up to grade level in reading.

I might also say that it is not atypical of middle-class parents to discuss little Johnny's reading problems in not so *sotto voce*. To help things along, Johnny is compared with a successful sister in the not so ego building process.

Many parents try to help their underachievers in reading. My experience from hundreds of conferences with parents is that such help usually results in both the child and the parent becoming upset. I am sure that if the child didn't have a block toward reading, after a few evening sessions of tears and screaming, he would have one. I become concerned about the guilt and even hostility toward the child that results from such encounters. My advice to parents is not to try to tutor their children unless both can feel comfortable in the situation.

Closely related to the mental block question is another question, "Do underachievers in reading display severe emotional problems, and are these emotional problems the cause of their not doing well in reading?" I would say that most of the cases I have seen do have emotional problems about their reading. There are enormous pressures put on the child to learn to read by parents and society. As the child progresses through the grades he is likely to become more and more frustrated if he cannot read his assignments. The cases that cause me more concern are those who are not upset about their reading. For the most part, these are the ones that have given up and I know that if they really feel that way I am going to have a difficult time teaching them to read.

As far as the causal relationship between reading and emotional problems is concerned, in most cases it resolves itself into the well-known issue of which comes first—the chicken or the egg? I know of no conclusive research on the causal relationship between reading and emotional problems. This is not to say that this phase of diagnosis has been neglected. Almost everyone who writes on the

subject offers a different list of presenting symptoms and a different explanation of their psychodynamics. Nevertheless, in the reading clinics across the United States clients with emotional problems are being helped to learn to read. Usually, if the emotional problems interfere or are still severe at the conclusion of reading therapy, the clinician will recommend mental health therapy for the child.

Another popular fallacy is that there wouldn't be any reading problems if the schools would quit using the sight method and teach the children phonics. First of all, I know of no public schools in five states in which I have worked where phonics was not being taught. Of course, this does not meet the issue as raised, for the phonics proponents believe that we should *begin* reading instruction with phonics. I don't agree that reading should be restricted to figuring out the pronunciation of words, to the neglect of such reading skills as comprehension. I do agree, however, that more phonics should be—and could be—taught systematically in the first grade in order to make children independent readers earlier. Unfortunately, the authors of many reading textbooks were influenced by some research conducted in 1937 (*9*), where the investigators found that children whose mental ages were below seven years of age were able to do little or nothing on a phonics test. This point of view prevailed despite Gates' research (*12*) in which he sensibly reasoned that the child's reading progress is not dependent solely on his mental ability. He concluded that such things as the specific method and materials and the speed with which pupils are required to move along, all influence the progress of the child.

More recently we have evidence from the First Grade Studies (*3*) supporting my point of view regarding the teaching of phonics, and expressing other important points. For example, "There is no one method that is so outstanding that it should be used to the exclusion of the others." In addition, it was found that there was greater difference in pupil achievement among teachers using the same method than there was between methods, and there was a greater difference in pupil achievement among schools than among methods. In other words, the teacher and the school do make a greater difference in how much the children achieve in reading than the methods examined in the First Grade Studies.

Dyslexia, Perceptual Handicaps, Minimum Brain Damage, and Other Fashionable Terms

One of the "in" terms used today in discussing reading problems is *dyslexia.* On February 20, 1969, an article appeared in the *New York Times* (p. 26) with a head stating, "Scientists Assay Dyslexia Clues. Origins of Reading Disorder Are Sought by Committee." Extracts from the article follow:

> . . . Dyslexia, a catch-all term for numerous reading disorders in children, continues to perplex parents, physicians, and educators who are trying, with little success, to learn why so many Johnnys can't read. "About one in seven school age children in the United States suffers some kind of dyslexic malfunction," Dr. Charles A. Ullman, a psychologist, said early this week. Dr. Ullman . . . is executive director of the National Advisory Committee on Dyslexic and Related Reading Disabilities.
>
> . . . In the past, most experts guessed that about 15 percent of all children in the nation could not learn to read because of fundamental malfunctions in either their physical or emotional makeup. "Now, five freshly completed studies corroborate that estimate," Ullman said.
>
> . . . After six months of discussion, there is still one hurdle the experts have not been able to overcome—how to define dyslexia. The psychologist, the neurologist, the educator, the audiologist, and the opthalmologist [sic] all view dyslexia from different grandstands.
>
> . . . A few points, however, the experts do agree on: dyslexia is not a disease in the pathological sense; it does not mean a child is emotionally disturbed; it does not mean his education has been inferior; and it does not mean the child necessarily has a learning problem.

I can understand how the various investigators might obtain divergent figures as to the incidence of dyslexia. A child's education may not have been inferior, but his teacher may have been unable to identify his particular style of learning to read. I fail to comprehend the committee's agreeing that the child does not have a learning problem. If a child is a nonreader, or is severely retarded in

reading, I definitely believe that he has a learning problem and is usually emotionally disturbed about it to some degree.

Let us continue with the last paragraph of the article, as it summarizes the confusion among the various writers on dyslexia so well: "The fundamental causes of dyslexia also are obscure. Some guess a genetic factor may be involved while others look to neurological, psychological, physiological, or socioeconomic reasons."

In an outstanding collection of readings on dyslexia, Cruickshank (*4*:84) points out in his article the confusion about defining dyslexia:

> . . . If a child diagnosed as dyslexic in Philadelphia moved to Bucks County, 10 miles north, he would be called a child with a language disorder. In Montgomery County, Maryland, a few miles south, he would be called a child with special or specific reading problems. In Michigan, he would be called a child with perceptual disturbances. In California, he would be called either a child with educational handicaps or a neurologically handicapped child. In Florida and New York State, he would be called a brain-injured child. In Colorado, the child would be classified as having minimal brain dysfunction.
>
> Since 1955, forty-three different terms, generally referring to the dyslexic child, have appeared in the literature. Fortunately, although the name for the disorder may change, the child remains the same. . . .

I am inclined to agree with Harris (*14*:169) that *dyslexia* is a term used primarily by medical specialists to define a subgroup within the group referred to by the term *reading disability*.

One question is frequently raised in connection with dyslexia, "What if my child is left-handed or hasn't developed a consistent choice of hands; how will this affect his reading?" While this notion is closely allied with the concept of cerebral dominance, I doubt that it will affect his reading. Some investigators agree with Zangwill (*30*:111) who said that "An appreciable proportion of dyslexic children show poorly developed laterality and in these there is commonly evidence of slow speech development." Even Zangwill speculated why some poorly lateralized children learn to read well. But such writers as Balow (*1*) fail to find any relationship between

laterality and poor reading, based on a survey of an unselected population. Benton (*2*:81-102) expressed some doubt about the relationship of directional sense, and expressed the opinion that when it does exist, it may be related to age, intelligence, or other syndromes. In a summary of research, Zeman (*31*) cited only three studies out of fourteen that reported significant relationships between laterality and reading.

When speaking to parent groups, I am frequently asked about some new method of diagnosis and treatment of remedial reading that has been reported in the popular press. Time does not permit me to discuss all of them that I am aware of; however, I shall briefly mention one that has attracted a great deal of attention. Carl Delacato (*6, 7, 8*) emphasized the attainment of developmental stages in neurological maturity resulting in cerebral dominance. In his second book (*7*), Delacato elaborated on his theory of neurological organization and advocated the importance of creeping and stylized walking activities for the development of dominance and the prevention of language disorders.

In a criticism of Delacato's theory, Glass and Robbins (*13*) analyzed fifteen studies offered by Delacato in his three books as support for his theory. Without exception, the studies cited by Delacato as a "scientific appraisal" of his theory of neurological organization were demonstrated to be of dubious value. The only two studies evaluating this theory were conducted by Melvyn P. Robbins (*21, 22*). Neither of his studies supported Delacato's theories, either with second-grade pupils or with retarded readers.

Conclusions

I have presented some of the facts and fiction concerning causes of reading difficulties, including my own point of view. However, because of space limitations, I have not been able to discuss these causes in depth.

As we have seen, there are many causes of underachievement in reading interacting with each other so that it is extremely difficult to isolate them and determine which is cause and which effect. Instead of engaging in *ex post facto* studies, we need to carefully design longitudinal studies such as Katrina de Hirsch's (*5*) before we

shall be able to speak with certainty about causes of reading failure. Such longitudinal studies will be most profitable if they are conducted by an interdisciplinary team. From what we now know, such research will require more expertise than any one individual can provide.

Whether we are engaged in research or in remediating the child's reading problems, we must be careful about pinning labels on him. Such labels have a tendency to become self-fulfilling prophecies. At our clinic at the Ferkauf Graduate School we have clients referred to us from hospitals, social agencies, other reading clinics, and schools with all sorts of labels—such as specific dyslexia, perceptually handicapped, alexia, and autistic. Regardless of such labels we have to find out what it will take to teach him to read and get on with the job. We may not cure his dyslexia, but we do teach him to read.

In closing I wish to point out that we should never become smug about what we now know about the causes of reading difficulties. In the inexorable advance of science, today's fact may become tomorrow's fiction.

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Basic Language and Cognitive Skills in Kindergartners*

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THIS PAPER offers a microscopic view of some familiar skill labels: auditory and visual factors. The authors have assumed, as a working hypothesis, that many of the children who fail to learn to read do so because at the beginning of reading instruction they lacked some of the skills necessary to the task. We have been trying to develop tests for those component skills which we suspect to be related to later reading acquisition and good performance on reading tests. We have used these tests as miniature experiments to ask if the skills tested are independent of one another, if any kindergartners have difficulty with the skill tasks, and if so, what the source of the difficulty is.

Twenty-one kindergartners from a Madison, Wisconsin, elementary school that draws students from a lower-middle-class section of the city participated in the first study. Each child, in three individual sessions lasting 30 to 50 minutes, performed the entire battery of tasks. Some tasks were administered in a single individual session of 50 minutes to 22 more kindergartners from a slightly lower socioeconomic stratum in Beloit, Wisconsin.

With that prelude, the rest of this paper will describe some of our findings, rather than discussing at length our research strategies and theoretical positions.

One of our concerns was whether kindergartners could identify

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TABLE 1

PERFORMANCE DATA ON BST, n = 21[a]

	% Per S	Mean Per S	Standard Deviation
Visual Tasks:			
Matching			
Objects, E	11%	33	.577
Single Letters, E	17% (13%)	1.71 (1.32)	1.189 (1.041)
Letter Groups, E	68% (60%)	8.10 (7.14)	2.508 (3.474)
Matching Retest, Total E	51% (59%)	4.62 (5.32)	2.247 (2.868)
Memory Matching, Total Test E	45%	7.19	2.909
E, Letter Groups Only	58%	6.90	2.343
Letter Discrimination, E	62%	7.43	2.271
Auditory Tasks:			
Rhyming Test, Total E	49%	9.76	2.809
Saying Yes Incorrectly, E	56%	6.76	3.949
Saying No Incorrectly, E	38%	3.00	2.608
Rhyming II Retest, Total E[b]	49%	9.81	3.415
Saying Yes Incorrectly, E	54%	6.48	4.045
Saying No Incorrectly, E	42%	3.33	2.595
Rhyme Production, E	61% (63%)	4.90 (5.00)	3.177 (3.381)
Initial Sounds, Total E	49%	17.48	4.215
Saying Yes Incorrectly, E	48%	10.62	7.756
Saying No Incorrectly, E	49%	6.86	4.640
Segmentation, First List			
Trials 1-5, Total C[b•]	48% (39%)	7.14 (5.91)	5.712 (5.903)
Trial 5 Only, C[b•]	60% (47%)	1.81 (1.41)	1.209 (1.333)
Transfer Test, C[b•]	17% (23%)	1.00 (1.36)	1.703 (1.649)
Segmentation, Second List			
Trials 1-5 Total C[b•]	48% (42%)	7.24 (6.23)	5.338 (5.389)
Trial 5 only, C[b•]	59% (52%)	1.76 (1.55)	1.221 (1.143)
Transfer Test, C[b•]	31% (27%)	1.86 (1.64)	1.740 (2.060)
Letter-sound Association Tasks:			
Alphabet Learning[b]			
All Trials, Total C[b]	29%	8.71	4.617
Last Trial On List, C	32%	1.90	1.578
Letter-Sound Associati			
Single Symbols-Trials 1-5 C	48%	7.19	3.842
Single Symbols, Trial 5, C	67%	2.00	1.000
Symbol Pair, Trials 1-5, C	16%	3.20	2.406
Symbol Pair, Trial 5, C	14%	.57	.676

TABLE 1 (*Continued*)

	% *Per* S	*Mean Per* S	*Deviation Standard*
Conditional Rule Learning[b]			
Trials 1-5, C[b]	59%	11.76	4.242
Trial 5, C	62%	2.48	1.327
Transfer, C	28%	1.14	.854
General Achievement:			
Alphabet Knowledge			
Production, E	73% (67%)	19.05 (17.32)	7.067 (7.955)
Recognition, E	77% (82%)	19.98 (21.32)	7.962 (7.006)
Vocabulary			
Picture Recognition, E	4% (5%)	1.00 (1.18)	1.000 (1.053)
Line Drawing Naming, E	18% (23%)	9.57 (12.27)	3.572 (4.096)
General Cognitive Functioning:			
Word Memory Span			
First List, C	—	3.90 (4.36)	.831 (1.177)
Second List, C	—	3.86 (3.86)	.793 (1.125)
Sorting Total C	65%	32.57	8.465
2 Category Without Ex., C	70%	7.05	1.359
4 Category With Ex., C[c]	64%	12.86	5.043
4 Category With Ex., scored for Ex.,C[d]	56%	11.29	6.349
4 Category Without Ex., C	63%	12.67	4.091
Simple Directions, Total E	13%	.524	.602

• Figures in parentheses are for a second kindergarten group (n = 22). Asterisk on footnote refers to this group.

[a] E = error score; C = correct response.

[b] A single *S*'s score was estimated to obtain this data; *S* refused to take the test or a test trial was omitted by *E*.

[c] Scored by adding, for each row, the number of times the most frequent category in that row was represented. Exemplars ignored.

[d] Scored by adding, for each row, the number of cards matching the exemplar in category.

and match letters of the alphabet. Few of the children had learned to name all the letters of the alphabet, as the 73 percent and 67 percent error rates on the Alphabet Recognition Task, shown in Table 1 indicate. We also asked the children to perform several other tasks with letters. The first was a matching task. A single upper or lowercase letter, printed one-half inch high, appeared at the

far left of a cardboard strip; four or five other single letters were printed in a row to the right. The child was asked to point to the letter in the row to the right that was just like the first one. Distractors were letters highly similar to the standard.

We knew the children could perform a matching task in a simple form with three dimensional toy objects as standards and alternates; only two errors had been made out of a possible 42 on such matching items. The error rate did increase to 20 percent when the toy distractors were highly similar—for instance, when distractors included safety pins differing in size and color from the standard safety pin. When these same children matched single letters, the error rate was 17 percent for the Madison group, whose mean age was 64 months, and 13 percent for the Beloit group, whose mean age was 69 months. That is, the children performed the task correctly most of the time, showing no evidence of position bias in responding. The children had the most trouble minding their *p*'s and *q*'s and *b*'s and *d*'s, as other researchers have indicated. Forty-five percent of the responses to these items were left-right confusion errors of the familiar sort. These three items testing *b, d,* and *p* accounted for 34 out of the 36 errors; only two errors were made on the other seven items. From Dunn-Rankin's 1968 data from second and third graders on confusability of lowercase letters, it can be determined that at least some of the latter items (e.g., *r*—*m n w r u*) approached the *b, d* series in difficulty.

When we then tested matching in the same way with pairs, triplets, and quadruplets of letters, an enormous difference appears in the data; the error rates jump to 68 percent for the Madison group and 60 percent for the Beloit group. Chance error rates would be 75 percent. The task was suddenly extremely difficult. In both the single letter matching and group letter matching we had chosen the most difficult distractors we could find; for pairs, one distractor was a reversal and the others made up of similar letters; for longer letter groups, all distractors were permutations of the standard. Looking at the errors on letter pairs in the Madison data, we found that 46 of the 66 errors made were reversal errors—that is, the child had picked the item with the right letters in the wrong order. One would only expect 22, or half as many, such er-

rors by chance. The same pattern emerged for errors on pairs in the Beloit data.

One viable hypothesis about the children's difficulty with the matching task is that they do not attend to order: *AB* is the same as *BA*, as far as they are concerned. Another possibility is that the children have failed to grasp the concept of letter group and are matching a single letter in the standard with a single letter in one of the alternates. Given our use of permutations as distractors, this hypothesis might account for the position bias revealed in the Madison data; when errors are made on letter groups, 63 percent involve choices of the first alternate, 21 percent choices of the second alternate, and 8 percent choices of third and fourth positions.

We retested the children on a similar matching task, interpolating two kinds of training to draw their attention to the order of letters. Group A, half the children in each study, received practice in lining up individual letters in the same order as a standard letter group. Group B was simply instructed, through an example, to pay attention to order. Analysis of the Madison retest data showed no significant difference between the two groups, but both improved on retest; the Beloit data show no significant improvement.

The substantial difference in error rate on single letters and letter groups led us to suspect that the source of error lay in the realm of information processing rather than visual perception. Contributing to this suspicion was the fact that the rows of stimuli presented were long enough so that the child could not view all the letters at once. So we posed the Madison children a truly successive, or memory, matching task, presenting the standard for two seconds and then removing it. The child then was shown the alternates and asked to select a match. In this task, errors on single letters were rare (6 out of a possible 84) but error rate increased to 58 percent on letter groups, an error rate comparable to that obtained in the formally simultaneous task. Again, reversal pair distractors elicited more than their share of errors; 50 percent of the time that children made errors on pairs they chose the reversal distractor.

The same picture of inability to deal with letter groups emerges in a discrimination task in which the Madison children

were asked to pick out the odd letter or letter group from a set of four. On single letters the error rate was 14 percent, but on letter groups it was 71 percent, approaching a chance performance level. No position bias was demonstrated in this task.

These findings indicated to us that it was not perceptual similarity of single letters or perceptual configurational similarity of letter groups which led to difficulty; the child had encountered an information processing problem or a conceptual problem. The child who is particularly deficient in group letter matching is, on the face of it, handicapped when he comes to the reading task. Further experiments are required, however, to localize the exact sources of failure in matching or discriminating letter groups. From such an exact localization of the problem could come the specifications for training procedures to remedy deficits.

Such were our experiments dealing with symbols; another set of experiments dealt with phonological, or auditory, skills which may be implicated by the reading task. By "phonological skills" is meant the child's ability to work with sounds independently of meaning: to detect instances of the same sound at the beginning of the word, to segment and match phonological stretches, to rhyme.

We were not sure that children knew what the word "rhyme" meant, and so we asked them to judge whether two pairs of words sounded the same at the end, providing a training series of 11 word pairs with feedback to further define our instructions. Madison children were then tested on 20 monosyllabic word pairs, eight of which actually rhymed. Of the nonrhyming pairs, six were similar in sound (that is, they shared at least one phoneme in the same position) and six were entirely unrelated phonologically.

The results were highly instructive to the test constructors; the 49 percent error rate indicated chance performance. Half the children showed a pronounced response bias, saying *yes* or *no* at least 17 out of 20 times. We tentatively concluded that we had chosen an inappropriate task to test rhyming ability; the only evidence in the data that a child's response was determined by the phonological relation of the stimulus pair was that children identified phonologically similar pairs as rhymes 60 percent of the time and dissimilar pairs as rhymes 40 percent of the time.

We then set the children a rhyme production task. The child first gave names for eight pictures to which the experimenter supplied two rhymes. Roles were then reversed and the experimenter named eight pictures, asking the child to supply a rhyme each time to the name. Here guessing rate should be zero. The children supplied rhymes 39 and 37 percent of the time. Group performance indices were only half the story; children's scores were distributed bimodally. Approximately half the Madison and Beloit subjects gave no or one rhyme; the remaining subjects gave four or more rhymes. Of the rhymes given, 50 percent were nonsense words. Some children could rhyme and seemed to understand the phonological nature of rhyming.

Madison children were immediately retested on another *yes-no* rhyming task. Performance again was near chance level; half the subjects were biased responders, including half of those who could produce rhymes. Quite clearly, the *yes-no* task had failed to assess rhyming ability.

The Madison kindergartners' ability to match initial sounds in a judgmental task was also tested. Half the children judged whether three series of words began with the sound that *s* stands for, the sound that *m* stands for, or the sound that *l* stands for; the other half repeated pairs consisting of an exemplar word and the test word and then judged if the test word began with /*s*/, /*m*/, or /*l*/. Again, the task was a failure; the 49 percent error rate was near chance, and half the subjects were biased responders.

There was one other phonological task given to the children which asked, indirectly, whether they could segment sounds. It went like this, "If I say *feel,* you say *eel.* If I say *shout,* you say . . . *out.*" At this point in instruction, any adult could perform the task perfectly with new stimuli, since the relation between stimulus and response is rule-governed. The children were given five study trials, each followed by a test trial, on two 3-item lists; in one list the response as well as the stimulus was a real word *(feel-eel);* in the other, the response was nonsense *(chief-ief).* The order of lists was reversed for half the subjects in each study. Following the fifth test trial of a list, a transfer set of six words was presented and the child was asked to guess what he should say. This essentially tested for

TABLE 2

CORRELATIONS[a] AMONG SELECTED BASIC SKILLS TESTS
For Two Kindergarten Groups
N = 21 for first entry, N = 22 for second entry

	2	3	4	5	6
1. Age in months	−.357	−.402	−.682**	−.269	−.155
	.048	.241	.140	.050	.631++
2. Matching—Letter Groups, errors		.788**	.502*	.582**	−.076
		.733++	.444+	.674++	−.070
3. Matching Retest, errors			.499*	.629**	.044
			.375	.760++	.178
4. Alphabet Production, errors				.612**	−.043
				.469+	.288
5. Alphabet Recognition, errors					−.170
					.016
6. Word Memory Span, correct					
7. Picture Recognition, errors					
8. Line Drawing Naming, errors					
9. Segmentation, Second List, correct					
10. Segmentation Transfer Trial, correct					
11. Rhyming Production, errors					

TABLE 2 (*Continued*)

	7	8	9	10	11
1. Age in months	−.160	−.266	.432	.346	−.281
	−.343	.045	.144	.204	−.085
2. Matching—Letter Groups, errors	.359	.273	.039	.175	.171
	.318	.299	−.504+	−.325	.163
3. Matching Retest, errors	.601**	.477*	−.138	−.104	.128
	.437+	.377	−.541++	−.302	.358
4. Alphabet Production, errors	.269	.347	−.492*	−.247	.477*
	.038	.117	−.306	−.100	.354
5. Alphabet Recognition, errors	.339	.587**	−.326	−.201	.292
	.347	.325	−.485+	.315	.372
6. Word Memory Span, correct	−.173	−.147	.383	.145	−.027
	.002	−.271	.311	.460+	−.022
7. Picture Recognition, errors		.182	−.131	−.086	.126
		.065	−.301	−.122	.254
8. Line Drawing Naming, errors			−.469*	−.461*	.146
			−.465+	−.200	.567++
9. Segmentation, Second List, correct				.865**	−.382
				.840++	−.619++
10. Segmentation, Transfer Trial, correct					−.229
					−.315
11. Rhyming Production, errors					

a Pearson Product-Moment Correlation Coefficients.
* $p < .05$ df = 19, 2-tailed.
** $p < .01$ df = 19, 2-tailed.
+ $p < .05$ df = 20, 2-tailed.
++ $p < .01$ df = 20, 2-tailed.

whether the child was learning the phonological relationship or rote associates. The children in both groups began to learn the task in five trials and improved from first to second list on the transfer test. There were large individual differences in the data and the distribution of scores approached bimodality; some children were doing consistently poorly on the task, and others consistently well. But no child showed the insight learning that an adult would. Errors were analyzed in a further attempt to see if the phonological relation between stimulus and response was being learned. Errors were classified as phonologically related to the stimulus if the vowel phoneme was the same. A second error category was formed by errors with vowel phonemes identical to one of the other two stimuli; these errors could be viewed as "intrusions" more characteristic of rote learning. A third category was comprised of everything else, including failure to respond. For the Madison and Beloit data combined, errors were phonologically related to the stimulus 70 percent of the time on the first list when responses were nonsense and 55 percent of the time when responses were real words. "Intrusion" errors increased from 8 percent on the nonsense list to 18 percent on the real list. Apparently the use of a real word response interferes somewhat with attention to the phonological relationship, but by and large the children were using it. This fact makes children's failure to "catch on" more significant; why they did not, although attending to the phonological relation, will be a subject of further study.

To summarize the data on phonological skills, it was found that rhyming and segmenting proved extremely difficult for many of the children; segmentation was acquired surprisingly slowly by those children who did relatively well on the task.

The component skills described here are far narrower and more specific than many accounts given in the literature. To continue to speak in such specific terms would be unwarranted if the tasks show high correlations among themselves. In Table 2 are given correlations for those Basic Skills Tasks which both Madison and Beloit subjects received. Criteria for the tasks chosen included task validity and reliability. The most striking fact represented by Table 2 is that, aside from expected significant correlations such

as those among matching tests and alphabet knowledge, the tasks appear independent of one another. Out of 55 correlations, only two are unexpectedly significant at the .05 level for both groups (Alphabet Production with Picture Recognition and Line Drawing Naming with second list Segmentation). If these tasks are indeed related to early reading acquisition, then our data provide little evidence for a global "readiness" factor. Rather, a variety of skills would be implicated and the child could be hindered in reading acquisition by deficits in any one of them.

Even this brief account indicates the strategy of our research: an experimental effort to localize the reasons for skill-deficits which will hinder later reading acquisition, the development of tests which pinpoint those deficits, and the eventual development of specific training procedures for kindergartners that would prevent some later failures in reading acquisition.

The Validity of Predictive Index Tests in Predicting Reading Failure at the End of Grade One

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THE BOOK *Predicting Reading Failure (1)* by Katrina de Hirsch, Jeanette Jefferson Jansky, and William S. Langford was published in 1966. This book contained the Predictive Index Tests that were designed to predict which children of kindergarten age would be unsuccessful in reading, writing, and spelling achievement by the end of second grade. The educational value of these tests rests upon their validity to perform this function. With the aid of a faculty research grant from the University of Massachusetts and with the cooperation of the public school system of Amherst, Massachusetts, this study was undertaken to determine the validity of the Predictive Reading Tests.

The Predictive Reading Tests are comprised of a battery of ten tests: Pencil Use, Bender Visual-Motor Test, Wepman Auditory Discrimination Test, Number of Words Used in a Story Test, Categories Test, Horst Reversal Test, Gates Word-Matching Subtest, Word Recognition Tests I and II, and a Word Reproduction Test. These tests attempt to establish the maturational level of children in various motor, perceptual, and language areas. According to the authors of the tests, children who pass three or fewer of the ten tests are classified as "high-risk" children and are not likely to be developmentally ready for reading instruction. These children are predicted to have a higher probability of academic difficulties in reading, spelling, and writing several years later. The authors recommend that high risk children should be given developmental training in each area of expressed difficulty and, if possible, be enrolled in transitional type classes at the first grade level.

De Hirsch, et al found that Predictive Index Tests had a 91 percent efficiency. It correctly identified ten of eleven children who failed reading and spelling at the end of the second grade from a sampling of fifty-three. It overpredicted to the extent that four children who received a failing score on the Predictive Index Tests were subsequently successful in reading and spelling by the end of the second grade. Overprediction may be a useful practice in providing "preventive measures to a larger population in order to eliminate the possibility of overlooking potential risks."

It seems, however, that the de Hirsch study is in need of replication since the ten Predictive Index Tests were chosen from a group of 37 tests that best predicted reading failure from among 53 subjects. The problem of "shrinkage" may occur when selecting a few measures from many measures when the group is small (2). Statistical data concerning the validity of the Predictive Index Tests needs to be obtained from a new sample due to the shrinkage problem.

The major purpose of the present study was to partially replicate the de Hirsch study with a new and larger sample. It modified that study by comparing the effectiveness of the Predictive Index Tests and the Metropolitan Readiness Test in predicting reading failure at the end of the first grade. The original study based its conclusions on reading failures at the end of the second grade. This study made the assumption that there is a large correlation between those pupils who are failures at the end of the first grade and those pupils who are failures at the end of the second grade. Comparisons can be made with the original study to the extent that this assumption is true.

Procedure

The pupils in first grade classes in Amherst, Massachusetts, during the school year 1967-1968, constituted the sampling used in this study. The pretests were given in September of 1967 and the post-tests in May of 1968. Only ten pupils were lost for statistical purposes from the original sample of 269 tested in September. The pretests administered were the Predictive Index Tests, the Metropolitan Reading Readiness Test, and the Peabody Picture

Vocabulary Test. The post-tests included a Teacher Judgment Rating, the Dolch Word List Sampling Test, and the Metropolitan Reading Test. Pupils were considered to be failures in reading if they fell below a critical level score on two of the three post-tests. The critical level scores for the various tests were as follows: preprimer or lower on the Teacher Judgment Rating, over 35 words missed on the Dolch Word Sampling Test, and a standard score of 40 or lower on the Metropolitan Reading Test.

Five examiners were trained and employed to administer the individual tests, and the two Metropolitan Tests were administered by the classroom teachers. All test results were checked for accuracy and consistency of scoring by the researcher and his graduate assistant, Patricia Douglas. Considerable care was taken in recording test results and checking computer cards for errors.

The Pearson product-moment coefficient was used to compute correlations between pre- and post-tests. The significance of these correlations was obtained by using Hotelling's t test. The Yates chi-square technique was used to test the significance between the Predictive Index Tests and the Metropolitan Readiness Test in predicting success or failure in reading at the end of the first grade.

Findings

1. The Predictive Index Tests and the Metropolitan Readiness Test predicted reading success and failure to a degree significant at the .001 level of significance. The Predictive Index Tests predicted 33 failures while the Metropolitan predicted 23 failures from the sampling of 259 pupils. The Predictive Index Tests overpredicted to the extent that 15 pupils who failed this test subsequently achieved success at the end of the first grade and it underpredicted to the extent that 18 potential achievers subsequently failed. The Metropolitan Readiness Test overpredicted to the extent that no pupils who failed this test subsequently achieved success at the end of the first grade, and it underpredicted to the extent that 28 potential achievers subsequently failed. No significant difference was found between the two tests in their ability to predict success and failure. The Predictive Index Tests were stronger in predicting the number of failures than the Metropolitan Readiness

Tests, but it was weaker in predicting the number of success achievers.

		Pretest (Predictive Index Tests)	
		Pass	Fail
Post-tests	Pass	193	15
	Fail	18	33

		Pretest (Metropolitan Readiness)	
		Pass	Fail
Post-tests	Pass	208	0
	Fail	28	23

2. The Predictive Index Tests and the Metropolitan Readiness Test were significantly related to each other at the .001 level of significance as pretests. There were 209 pupils who had successful achievement on both pretests, 20 who failed both pretests, two who failed the Metropolitan but passed the Predictive Index, and 28 who failed the Predictive Index and passed the Metropolitan. This evidence is an indication of the more conservative nature of the Metropolitan Readiness Test.

		Metropolitan	
		Pass	Fail
Predictive Index	Pass	209	2
	Fail	28	20

3. The Metropolitan Readiness Test correlated .73 with Teacher Judgment, .67 with the Dolch Test, and .68 with the Metropolitan Reading Test. The Predictive Index Tests correlated .55 with Teacher Judgment, .61 with the Dolch Test, and .63 with the Metropolitan Reading Test. All of these correlations for predicting success in reading achievement at the end of the first grade were significant at the .01 level of significance, with the exception of a .02 level of significance between the Predictive Reading Tests and the Dolch Test.

4. The correlations between the Metropolitan Readiness Test and the Predictive Index Tests in predicting reading success were not significantly different for the Dolch Test and the Metropolitan

Reading Test at the .01 level of significance. A significant difference was demonstrated at the .01 level of significance between the correlations of the two pretests and Teacher Judgment. Although the Metropolitan Readiness Test had slightly higher correlations, the two tests are not appreciably different in predicting reading achievement at the end of grade one. The higher correlation between the Metropolitan Readiness Test and Teacher Judgment may be due to the more conservative feature of each measure.

5. The correlations between the various subtests of the Predictive Index Tests and the total Predictive Index Score were as follows: Pencil Use .39, Bender Visual-Motor Test .62, Wepman Auditory Discrimination Test .53, Number of Words Used in a Story Test .29, Categories Test .51, Horst Reversal Test .70, Gates Word-Matching Subtest .67, Word Recognition Test I .44, Word Recognition Test II .58, and Word Reproduction .69. The Bender-Visual-Motor Test, Horst Reversal Test, and Gates Matching Test are among the tests that have the greatest correlation with the total Predictive Index Score. All three of the aforementioned subtests are in part derived from standardized readiness tests. This would indicate that the total scores of several group readiness tests could be as great or greater than the Predictive Index Tests in predicting reading success at the end of the first grade.

6. The correlations between the mental age as determined by the Peabody Picture Vocabulary Test and reading success at the end of the first grade were: .44 with Teacher Judgment, .33 with the Dolch Test, and .37 with the Metropolitan Reading.

7. There was a negative correlation between boys' readiness test scores and reading success. The correlation was —.23 with Teacher Judgment, —.33 with the Dolch Test, and —.29 with the Metropolitan Reading Test. This evidence is in agreement with most research studies that indicate that boys are not as successful as girls in reading achievement at the end of the first grade.

Conclusions

The Predictive Index Tests and the Metropolitan Readiness Test predicted reading achievement about equally well at the end of the first grade, with a slightly favorable advantage to the Metro-

politan Test. The Metropolitan Readiness Test could be recommended for general predictive purposes in reading achievement since it has the advantage of being a group test.

The Predictive Index Test, however, may be favored as a test for predicting reading failure. In fact, that was its stated purpose. The Predictive Index Tests correctly predicted 33 pupils who would fail to have adequate reading achievement, while the Metropolitan Test predicted 23 pupils. The overprediction rate was higher for the Predictive Index Tests than the Metropolitan Readiness Test by 15 pupils, but its underprediction rate was lower by 10 pupils. From a preventative standpoint, it may be wise to overpredict with such an important developmental task as reading. To overpredict results in a more costly readiness program in the first grade. The initial expense may well be worthwhile, as it is less costly to operate preventative programs than remedial programs in terms of both monetary and human expenditure. Research studies indicate that the sooner we are able to find and overcome reading problems, the greater is the probability for adequate reading development.

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The Teacher's Diagnosis of the Disabled Reader

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REMEDIATION of the disabled reader in both classroom and clinic requires careful diagnosis. This paper defines diagnosis and shows its application in the classroom. It explains the nature of cause and the techniques of diagnosis. It illustrates the use of school history, objective data, informal inventories, and observation of individuals requiring remediation. It applies diagnostic techniques to a group of children and shows means of identifying their reading needs. It illustrates application of procedures in the diagnosis of a second grade child with a reading disability and sets forth the specific acts of diagnosis.

Definition of Diagnosis

Diagnosis, as applied to reading, is a systematic and rational explanation of an individual's inability to make anticipated progress in learning to read. Diagnosis can be made at four levels: identification of difficulty, classification of disability, determination of specific reading needs, and detection of the various causal factors underlying the individual's disability. At all levels diagnosis is an interpretation of an individual's performance in reading and not merely an evaluation.

Diagnosis at the fourth level is primarily concerned with cause-effect relationships as related to reading disability. Causes may be primary, constitutional, exciting, predisposing, and secondary in nature. A primary cause is the principle or original cause of reading disability. It is consequential and leads directly to the effect. A constitutional cause is within the body and is not local. An exciting cause leads directly to maladjustment and is also consequential in nature. A single factor or group of factors which renders a person liable to maladjustment without actually producing it is a predis-

posing cause. A secondary causal factor is one which, along with others, helps to bring on maladjustment. It is contributory in nature.

Means of Studying the Child

Teachers in the classroom and clinicians in the laboratory have available four sources of information in studying the child with a reading disability. These approaches make it possible to determine not only the individual's reading needs but also to assess why they may have developed.

The student's academic history, for example, can show grade placement, years and frequency of attendance, performance in various subjects, areas of interest, cooperation of parents, and goals set up by parents for the child to achieve. Anecdotal records and comments by teachers can provide "hunches" which can be useful in understanding the child and his instructional and personal needs. Not all facts, however, will be found relevant and material in nature.

Carefully selected tests are of value in determining the reading needs of a child and are also helpful in appraising his expectancy level of attainment. The teacher, however, should understand that a group of scores is more valid and significant than a single score for an individual. Furthermore, test data should be interpreted in terms of all the known facts concerning the child and as only one aspect of his performance in his environment. No single test of reading can be regarded as a comprehensive and adequate measure of his reading achievement. Test scores, however, are of value in determining fairly well the reading level of the student and the range of achievement within the group.

Informal reading inventories that provide an appraisal of the student's independent, instructional, frustration, and capacity levels furnish an excellent opportunity for the teacher to observe the child as he reads. Furthermore, they furnish qualitative information of marked value in the diagnosis of the disabled reader. Informal inventories, for example, can be designed, for both silent and oral reading situations, to investigate the child's ability to read for a

purpose, to identify main ideas, to draw inferences, to locate and define key words, and to follow directions. The child's attitude toward reading can be appraised and manifestations of visual defects may become apparent. In using informal inventories the teacher is chiefly concerned in securing "hunches" which, when verified by other data, can be useful in diagnosis.

Observation is an excellent means of studying the child, for every act of the individual is a projection of the inner self. In observing the individual, again the teacher is primarily concerned in securing "hunches" related to his reading needs and to the underlying causal factors affecting his achievement. It is necessary for her to differentiate between facts and inferences. Furthermore, she must identify that which is only *relevant,* that which is *material* or essential to the diagnosis, and that which is *consequential* and leads directly to the effect. In other words, she must understand that not all facts observed are of equal significance. She must focus her attention upon the child in both a free ranging and analytical attempt to discover causes contributing to his behavior.

Determining the Reading Needs of 30 Second Grade Children

Miss Rose, a second grade teacher in a midwestern town, has in her class 30 pupils whose achievement in reading ranges from that of two boys who are nonreaders to that of a little girl reading at fifth grade level. Miss Rose has observed and studied her students continuously for a six-week period as she has made use of three basal readers and an informal approach to the teaching of reading. She has not been content in "just teaching" but has attempted to identify the reading needs of her pupils. She has been concerned with diagnosis at all levels.

After studying school records and administering a survey test in reading, she found it advisable to conduct informal reading inventories with eight children in her class. Observations were made daily, and anecdotal records were recorded for those children of immediate concern to her. Miss Rose listed the reading needs of her pupils as follows:

- Sight reading,
- Word attack skills,
- Reading for main ideas,
- Development of concepts,
- Reading silently to answer questions,
- Asking questions and reading to find answers,
- Following printed or written directions to color, draw, or play a game,
- Identification of details,
- Reading to others for their satisfaction,
- Development of background for stories and activities,
- Development of interest in books, and
- Development of self-concept of five boys and one girl.

Miss Rose was not only acquainted with the group needs of her boys and girls, but she was aware of their individual needs as well. These objectives for each child were listed briefly on 3" x 5" cards and systematically filed. She believed that these goals were essential in the planning of instructional procedures and remediation.

Stephen, a nine-year-old boy who disliked reading and who was becoming a behavior problem, was referred to a team for clinical study. This group of specialists is made up of individuals with backgrounds in psychology, sociology, and education. A teacher referring a child for study becomes a temporary member of the team.

An Individual Diagnosis

Stephen, who is well liked by his associates, had been retained in the kindergarten and had spent two years in the first grade. He is reading at first grade level and is not interested in books unless they contain stories of animals and of the out-of-doors. His parents point out that Wendy, his sister younger by two years, reads much better than Stephen. The school principal adds that Stephen is "rapidly becoming a disciplinary problem" and that "he is showing evidence of social maladjustment." The problem, briefly stated, is, "Why is Stephen a disabled reader?"

Home Background

Stephen's parents are high school graduates with business training who are interested in the academic success of their two children, Stephen and Wendy. Both parents report that they have little time for reading. They add, however, that many books and magazines have been provided for their children. Both father and mother have repeatedly pointed out that Wendy, who is only seven, is a much better student than her brother, Stephen. In attempting to improve Stephen's performance in reading they have conducted "reading sessions" in which oral reading is emphasized. Wendy is cited as an example of attainment in all of the language arts. It is reported that the children attend church school but fail to understand why they are required to do so. The parents are interested in sports, especially bowling, and live in a large home in an upper middle-class neighborhood. Home life is reported to be happy.

Developmental History

According to Stephen's baby book he weighed six pounds, ten ounces at birth and was "very eager for food." Developmental history is normal in all respects. Stephen, a happy and well developed child, was able to sit alone at seven months and was walking at twelve months. It is reported that he is well coordinated in his movements and is right handed and right eyed. There is a history of reversals.

School History

Stephen has been four years in the public schools, and his grade placement is that of a child approximately two months in the second grade. The school history indicates that Stephen has had formal instruction in reading for three years. One basal text and "work in phonics" have been utilized. Attendance has been regular. He accepts his teachers but is not interested in the activities of the classroom. It is reported that he likes stories by Dr. Seuss and books about animals, that he writes interesting sentences and does excellent work in arithmetic. In an interview, Stephen said that he "likes a good fight."

Medical History

The examining physician reports physical growth, nutrition, and development to be normal in all respects. No abnormalities of function, glands, nervous system, gait, posture, or speech were observed. It was recommended that Stephen be referred to the Psycho-Educational Clinic for study.

Summary of Clinical Findings

The Wechsler Intelligence Scale for Children furnished verbal, performance, and full scale IQ's of 87, 103, and 94, respectively. Stephen's performance on each of the subtests was well within the average range. Memory was reported as excellent. He reversed several pieces of the manikin and auto while completing the object assembly subtest. In the opinion of the psychologist, Stephen appeared to lack confidence in himself and to be dependent upon the examiner for assistance and direction.

Six correct responses were made on the Detroit Word Recognition Test; this is equivalent to the performance of a child three months in the first grade (1.3). The Morrison-McCall Spelling Scale provided a grade score of 1.7. A measure of arithmetic computation indicated that Stephen performs as well as a child four months in the third grade (3.4). The Healy Pictorial suggested superior ability to identify, interpret, and evaluate concepts expressed in picture form. His percentile was 92.

An informal reading inventory provided only instructional, frustration, and capacity reading levels. His instructional, frustration, and capacity reading levels given in grade equivalents were 1, 2, and 4, respectively. In the opinion of the examiner, these tentative evaluations of achievement in reading were not as significant as the observations and inferences which could be drawn from his performance. It may be inferred from the inventory that Stephen made good use of contextual clues, that ineffective use was made of phonics, that sight reading was inadequate, and that Stephen enjoyed reading to answer questions asked by the examiner.

Performance on association cards provided the following data.

	1st trial	2nd trial	3rd trial
Visual-visual	70%	80%	100%
Visual-auditory	90%	100%	100%

Stephen was stimulated by this activity, and it may be inferred that, when adequately motivated, his response to the learning of symbols was unusually successful. Visual survey tests were negative in all respects.

Acts in Preparation of Diagnosis

After the problem had been identified, the following hypotheses have been tentatively assumed.

1. Reversal tendencies may be a factor.
2. Sibling rivalry can be significant.
3. Mental set against reading may be a cause.
4. Premature instruction can be a causal factor.
5. Inadequate choice of teaching method may be significant.
6. An inadequate self-concept should be considered.

Each of these hypotheses has been evaluated in terms of the total situation to determine whether each is revelant, material, or consequential. Hypothesis 1, reversal tendencies, was assumed to be only relevant. Hypothesis 2, sibling rivalry, was judged to be contributory in nature. Hypothesis 3, mental set against reading, and hypothesis 4, premature instruction, have been accepted, and hypothesis 3 has been assumed to be material and essential to the diagnosis. Hypothesis 6, inadequate self-concept, was rejected as irrelevant. It was the consensus that hypothesis 4, premature instruction, was consequential when it was discovered that formal instruction in reading had been provided during his second year in kindergarten and later continued in the first grade. Stephen's lack of readiness and the use of one basal text for two consecutive years developed a marked dislike for reading. As a result of this discovery and explanation it was assumed that premature instruction in reading was the consequential factor leading directly to the effect. It was then predicted that if Stephen's attitude toward reading was changed so that he could

enjoy the learning process, adequate progress would be made. This prediction led later to verification, and the acts of diagnosis were complete. The diagnosis could then be stated as follows.

Stephen is a boy of average intelligence who has achieved at a low level in the language arts, especially reading, primarily because of a mental set against reading which has resulted from formal instruction before he had reached a sufficient degree of readiness. Sibling rivalry can be a contributing factor.

Suggested Treatment

The staff of clinical workers including Miss Rose made the following recommendations:

1. In order to stimulate an interest in reading, it was suggested that a visual-visual-auditory approach be utilized.
2. Sibling rivalry which has been manifest in the home should be reduced to a minimum.
3. Oral reading should not be *required* by teacher and parents. It should be voluntary.
4. The use of *why* and *how* questions should be emphasized in developing purposeful reading.
5. Parents should aid Stephen only when he asks for help. There should be no more reading "sessions" at home.
6. Desired responses on the part of Stephen should be reinforced by praise and commendation.

Summary

This paper has defined diagnosis and shown its application to a group of 30 second grade children and to the clinical study of a member of the class. It suggests that the classroom teacher can make and assist in formulating diagnosis at all levels. An attempt has been made to bring to a sharp focus the eight acts preparatory to the statement of diagnosis.

A Diagnostic Comparison of Two Third Grade Reading Classes

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TWO GROUPS of third grade pupils were selected for intensive study during the 1967-1968 school year. One of these groups was experiencing success in learning to read, and the other was not. The children were assessed on 23 variables measuring their intellectual, perceptual, language, and reading skills. A comparison of their performance on these variables was made to determine what differences might account for their differing patterns of reading achievement.

Subjects

The subjects in this study were children from the inner city area of a large metropolitan southern city. They attended an elementary school which serves lower and lower-middle socioeconomic level families. All of the children in the study were Negro, and the majority of them could be classed as educationally disadvantaged.

Group A consisted of 15 children who were achieving satisfactorily in reading; at the conclusion of the school year they were reading from the Scott, Foresman reader for the fourth grade. Group B consisted of 19 children who were not achieving satisfactorily in reading; at the conclusion of the school year they were reading from first grade level books in the Lippincott series (either the primer, 1-1, or 1-2 books). The children were in different classes with different teachers and were being instructed with different reading methods and materials. No attempt was made to assess the effect of the teachers or methods upon these children's progress. Rather, the purpose of the present study was to compare diagnostically the two groups of children at the end of third grade in order to plan for their future instruction in reading.

Instruments

In order to describe the samples, each child's sex, socioeconomic level, and chronological age were recorded. Socioeconomic level was estimated by the school social worker as either low or lower-middle.

Two individual measures of intellectual functioning were obtained by the school psychometrist. Each child was given the Stanford-Binet Intelligence Scale and his mental age, IQ, oral expressive vocabulary score, and digit span score were calculated. Since the Binet largely assesses verbal functioning, each child was also given the performance scale of the Wechsler Intelligence Scale for Children (the WISC), and his performance IQ and subtest scale scores were calculated. The performance subtests included Picture Completion, Picture Arrangement, Block Design, Object Assembly, and Coding.

Perceptual skills were assessed by three measures. The Bender Visual Motor Gestalt Test was administered by the school psychometrist, and each child's developmental age was calculated as an estimate of his visual-motor perception and coordination. Three subtests of the Illinois Test of Psycholinguistic Ability (the ITPA) were administered. The Auditory-Vocal Automatic Test measures the child's oral control over standard English morphology; the Auditory-Vocal Association Test measures his facility with verbal analogies; and the Visual-Motor Sequencing Test assesses his ability to duplicate a pictorial sequence from memory. Two subtests from the Gates-McKillop Reading Diagnostic Test were also given: the Auditory Discrimination Test and the Auditory Blending Test.

Both subtests of The Metropolitan Reading Tests were given as pre- and post-measures of reading achievement. The Elementary Test, Form B, was given in the fall, and the Elementary Test, Form C, was given in the spring. The Reading subtest is a measure of reading comprehension, and the Word Reading subtest is a measure of reading vocabulary.

Various studies have shown all of these variables to be significantly related to reading in populations of comparable age, sex, and socioeconomic level.

Procedure

The reading tests were given as group tests by their respective classroom teachers in October and May of the school year. All other tests were given individually either by the school psychometrist or by an educational psychology graduate student trained in testing procedures.

The data were analyzed in several different ways. Means and standard deviations were calculated by group for each variable and *t* tests were calculated between the means for Groups A and B. Intercorrelation matrices were computed for both groups, as were partial correlations with the effects of Binet IQ held constant. In addition, a sample of oral reading from each child was analyzed for oral reading errors and the pattern of errors in the two groups was compared. The .05 level of significance was used for all tests of significance.

Results and Discussion

As was expected, the two groups performed quite differently on a number of variables.

Mean Scores on the 23 Variables

One way of contrasting the two groups is to compare their mean scores on the 23 variables. Table 1 gives the mean and standard deviation for each variable by group and the comparison of each pair of means by the *t* test.

The two groups did not differ significantly in sex (both groups had more girls) or socioeconomic level (both groups had more children of lower-middle socioeconomic level). Group A had a significantly higher mean chronological age than Group B (8 years-8 months compared to 8 years-5 months). Group A scored higher in reading achievement in the fall and spring and on all the intellectual, perceptual, and language measures than Group B. This difference was significant for all the variables except the WISC Performance IQ, WISC Picture Completion, WISC Block Design, WISC Coding, and ITPA Visual-Motor Sequencing. These latter variables all measure aspects of visual-motor perception and coordination. Apparently the group

TABLE 1

A DIAGNOSTIC COMPARISON OF TWO THIRD GRADE READING CLASSES
Means and Standard Deviations for 23 Variables in Groups A & B

Variable	*Group A (N = 15)* *Mean*	*s. d.*	*Group B (N = 19)* *Mean*	*s. d.*	*t*
Sex (1 = male, 2 = female)	1.60	0.51	1.68	0.48	−0.435
SEL (1 = lower middle, 2 = low)	1.67	0.49	1.63	0.50	0.205
Chronological Age[1]	105.33	4.08	101.47	4.82	2.526*
Binet Mental Age[1]	109.87	11.57	90.95	9.90	5.041*
Binet IQ	103.47	12.09	87.68	10.45	4.009*
Binet Vocabulary	8.93	1.87	6.58	1.80	3.701*
Binet Digit Span	9.13	1.19	6.37	2.06	4.911*
Bender-Gestalt[1]	90.80	16.33	78.79	12.84	2.335*
WISC Performance IQ	92.27	8.71	87.26	11.53	1.441
WISC Picture Completion	8.33	2.02	7.79	2.07	0.771
WISC Picture Arrangement	9.87	2.07	8.26	1.99	2.282*
WISC Block Design	8.47	2.36	7.58	2.59	1.045
WISC Object Assembly	8.47	2.39	6.84	2.17	2.052*
WISC Coding	10.00	1.93	9.95	2.04	0.078
ITPA Auditory-Vocal Automatic[1]	105.73	11.97	76.11	10.08	5.340*
ITPA Auditory-Vocal Association[1]	97.80	11.25	82.11	10.82	4.108*
ITPA Visual-Motor Sequencing[1]	93.13	14.21	82.95	15.10	2.019
Gates-McKillop Auditory Discrimination	11.80	1.97	9.42	3.86	2.328*
Gates-McKillop Auditory Blending	11.20	3.05	8.21	4.80	2.206*
Metropolitan Reading-Fall[2]	4.65	0.71	3.36	0.71	5.280*
Metropolitan Word Reading-Fall[2]	4.22	0.95	2.86	0.67	4.702*
Metropolitan Reading-Spring[2]	5.12	0.55	3.74	0.52	7.408*
Metropolitan Word Reading-Spring[2]	5.00	0.78	3.77	0.59	12.640

[1] In months.
[2] Grade score.
* *t* significant beyond .05 level.

which had been successful in learning to read experienced as much difficulty with the visual-motor tasks as did the group which had not been successful in reading. This is further substantiated by the fact that Group A's WISC Performance IQ score was significantly lower than its Binet IQ score ($t = 2.96$), while there was no difference between the two IQ measures in Group B. The fact that Group A scored significantly higher on the individual verbal IQ test (the Stanford-Binet) probably accounted for much of the difference between these two groups in test performance as well as in school achievement.

Another type of comparison which may be made between the mean scores is that of chronological age, verbal mental age, and perceptual development age within each group. For Group A there was no significant difference between the group's mean chronological age and verbal and mental age as measured by the Binet. However, both their mean chronological age and verbal mental age were significantly higher than their mean perceptual development age, as measured by Gestalt test ($t = 3.34$ and 3.69, respectively). For Group B there were significant differences in all three comparisons, with their mean chronological age being higher than their mean verbal mental age and their mean perceptual development age ($t = 4.17$ and 7.20). Their mean verbal mental age was also higher than their mean perceptual development age ($t = 3.27$). Thus, for both groups their verbal skills appeared to be more mature than their perceptual skills, although the low achieving group's scores in both areas were substantially below what one might expect from their chronological age.

Intercorrelation Matrices

The complete intercorrelation matrices of the 23 variables for each of the two groups were obtained and correlations significantly different from chance at the .05 level of probability were noted. Correlations of .51 or greater were significant for Group A ($N = 15$) and those of .46 or greater were significant for Group B ($N = 19$). The pattern of significant correlations within each matrix varied greatly and only eight correlations were significant in both groups. These included the relationship between Binet MA and Binet IQ ($r = .88$ and .90, respectively); WISC Performance IQ and WISC Picture Arrangement ($r = .68$ and .85); WISC Performance IQ and WISC Object Assembly ($r = .56$ and .52); ITPA Auditory-Vocal Association and Binet MA ($r = .61$ and .62); ITPA Auditory-Vocal Association and Binet IQ ($r = .66$ and .46); Gates McKillop Auditory Discrimination and Binet IQ ($r = .52$ and .54); Gates-McKillop Auditory Blending and ITPA Auditory-Vocal Automatic ($r = .54$ and .83); and the spring scores on the Metropolitan Reading and Word Reading Tests ($r = .78$ and .59).

These correlations indicate that the ITPA Auditory-Vocal Asso-

ciation and the Gates-McKillop Auditory Discrimination tests are measuring, in part, the same abilities as is the Binet Intelligence Test.

Group A

Within Group A, there were a number of additional significant relationships. Of particular note are the correlations of the Bender-Gestalt with Binet Digit Span ($r = .65$), WISC Object Assembly ($r = .68$), and the ITPA Auditory-Vocal Automatic Test ($r = .64$). The abilities which these variables seem to have in common are sequencing and immediate memory.

Both sex and socioeconomic level were significantly correlated with Binet IQ in this group ($r = -.54$ and .63, respectively). The males and the children assessed as lower-middle socioeconomic level obtained the higher scores ($r = .52$ and .65). The ITPA Auditory-Vocal Association Test and Gates-McKillop Auditory Blending were related to socioeconomic level with the children of lower-middle socioeconomic level obtaining the higher scores ($r = .52$ and .59). The correlation of ITPA Auditory-Vocal Association with both sex and socioeconomic level is probably due to the significant correlation of each of these variables with Binet IQ.

Several variables were related to reading achievement in this group. They include Binet Oral Vocabulary Metropolitan Reading and Word Reading in the fall and in the spring and each of the four reading measures ($r = .67, .62$, and .62, .62, respectively); WISC Picture Completion and all of the reading variables except Word Reading-spring ($r = .62, .56$, and .52); ITPA Auditory-Vocal Automatic and the four reading variables ($r = .58, .78, .77$, and .57); ITPA Auditory-Vocal Association and the two spring reading measures ($r = .75$ and .53); and Gates-McKillop Auditory Blending and the two fall reading measures ($r = .62$ and .61). These correlations point up the relationship between oral language skills and reading achievement for those children who are making satisfactory progress in reading.

Group B

Group B presents quite a different pattern of significant relationships among the variables. There were significant relationships between the Binet and WISC scores, with Binet IQ significantly related

to WISC Performance IQ ($r = .74$), WISC Picture Arrangement ($r = .76$), WISC Block Design ($r = .59$), and WISC Coding ($r = .59$). In addition there were significant interrelationships among several of the WISC subtests. The Bender-Gestalt test was related to both Binet IQ and WISC Performance IQ ($r = .47$ and .64, respectively) as well as to WISC Picture Arrangement ($r = .54$), WISC Block Design ($r = .55$), WISC Coding ($r = .66$), and ITPA Visual-Motor Sequencing ($r = .60$). In Group B the Bender-Gestalt Test seems to be measuring visual sequencing and perception, although the correlations with the two measures of intelligence may account for much of its relationship with the other variables. The Gates-McKillop Auditory Discrimination Test was related to WISC Performance IQ and WISC Picture Arrangement as well as to Binet IQ ($r = .54$, .68, and .54, respectively).

The Metropolitan Reading Test-fall scores for this group were significantly correlated with Binet MA and IQ ($r = .54$ and .47), Bender-Gestalt ($r = .47$), WISC Block Design ($r = .51$), and ITPA Visual-Motor sequencing ($r = .57$). Word Reading-fall was related to WISC Picture Arrangement ($r = .46$). Only WISC Picture Arrangement was significantly correlated with spring reading achievement ($r = .53$).

In Group B, the group experiencing difficulty in mastering reading, the variables significantly related to reading are primarily visual-motor perception and sequencing variables, rather than oral language variables.

Groups A and B Contrasted

Inspection of the two intercorrelation matrices for these groups shows that the pattern of significant interrelationships, as well as the variables significantly related to reading achievement, are quite different. For those children who are experiencing success in reading, Group A, Binet Oral Vocabulary is more relevant than Binet or WISC Performance IQ. For Group B, however, overall IQ as well as the WISC subtest scores and the Bender-Gestalt test were related to reading. This difference seems to have some significance for teaching reading. The children in Group B have not mastered the decoding aspect of reading. Therefore, visual perception, visual-motor coordination, and sequencing skills are extremely important to their

instruction and success. For the children in Group A who have mastered the decoding skills, it is oral language comprehension which is important, even if their perceptual skills are deficient.

Partial Correlations

As was mentioned earlier, Group A achieved a significantly higher mean score on Binet IQ than did Group B. No such difference was noted in the mean IQ scores on the WISC Performance Test, however. In addition, Binet IQ was significantly correlated with five variables in Group A and with nine variables in Group B. For these reasons, it was decided to compute partial intercorrelation matrices for each of the groups with Binet IQ scores held constant.

The variables which still had significant relationships for both groups are the WISC Performance IQ and WISC Picture Arrangement ($r = .65$ and .66, respectively) and the Metropolitan Reading and Word Reading-spring ($r = .80$ and .50, respectively). The relationships between WISC Performance IQ and WISC Object Assembly, as well as between Gates-McKillop Auditory Blending and ITPA Auditory-Vocal Automatic, are no longer significant when Binet IQ is partialled out.

Within Group A, WISC Picture Completion is still significantly related to Metropolitan Reading-fall ($r = .58$), but not to the other reading variables. All four of the reading variables are significantly related to ITPA Auditory-Vocal Automatic ($r = .53$, .75, .74, and .54, respectively), indicating that the relationship between reading and proficiency with English morphological endings is independent of the relationship of each to intelligence. In other words, the children who are succeeding in reading also have mastered the oral use of standard English morphological endings. ITPA Auditory-Vocal Association and the two spring reading measures are still related ($r = .74$ and .53). Gates-McKillop Auditory Blending and the two fall reading measures are also still related ($r = .59$ and .55). These correlations also indicate a strong relationship going beyond that which could be explained by general verbal intellectual functioning. In general, there is still a positive correlation between success in reading and oral language proficiency for the group of children who are succeeding in reading.

In Group B, only two of the correlations with reading measures hold up with the effects of Binet IQ removed. There is still a significant correlation between Metropolitan Reading-fall and ITPA Visual-Motor Sequencing ($r = .48$) and between Word Reading-spring and WISC Picture Arrangement ($r = .51$). In both of these instances it is a relationship between a visual sequencing variable and reading that remains.

The partial correlation matrices indicate that there is still a difference in the patterns of relationships among these variables in the two groups. For those children who are succeeding in reading, oral language skills are most highly related to reading achievement with the effects of verbal IQ removed. However, for those children who have not mastered the beginning steps of reading, it is visual-motor sequencing skills which are most highly related to reading achievement in the absence of the effect of verbal intelligence.

Oral Reading Errors

One other comparison which was made between these two groups of children was an analysis of a sample of their oral reading errors. Each child was asked to read orally a passage of approximately 100 words from the reader in which he was being instructed. His reading was taped and his errors coded, independently, by two experienced reading teachers. Several categories of errors were noted: self-corrections—when the child made an error and then spontaneously corrected it (for example, when he read *why* for *where* and then changed to *where*); substitutions—when he substituted a different word for the one written (for example, *stir* for *steer*); omissions—when he skipped a word (for example, *it went* for *then it went*); additions—when he added an extra word or words (for example, *the big sled* for *the sled*); and dialect errors—when a child "translated" the sentence into his own dialect (for example, *hot dog* for *hot dogs*).

Group B made many more oral reading errors than did Group A, even though the passage which they read was from the reading book being used to instruct them. The percentage of errors in each category was noted for Groups A and B and some comparisons were made. Each group had more substitution errors than any other cat-

egory (53 percent and 55 percent, respectively). They also had about the same percent of self-corrections (15 percent and 12 percent). However, Group A had many fewer omissions than Group B (12 percent compared to 29 percent). This is probably because many of the children in Group B tended to skip words which they did not know. Group A had more additions (10 percent compared to 3 percent) and more dialect errors (5 percent compared to 1 percent) than did Group B. The higher percent of dialect errors in Group A may indicate better comprehension on their part. That is, they were reading, understanding, and "translating" the passage into their own oral dialect.

Summary of Results

The diagnostic comparison of the two classes of third grade children from an inner-city school was made using 23 measures assessing their demographic characteristics and their intellectual, perceptual, language, and reading skills. Group A is experiencing success in reading and they achieved significantly higher mean scores on 15 of the 20 skill variables than Group B, which is not experiencing success in learning to read. Particularly interesting is the finding that there was a significant difference between the two groups' Binet IQ scores, but not between their WISC Performance IQ scores.

Intercorrelation matrices and partial correlation matrices with the effects of the Binet IQ removed were computed. Quite different patterns of correlations were obtained. For Group A, oral language variables were significantly related to reading achievement, while for Group B, visual perceptual and sequencing variables were significantly related to reading achievement. This difference must be considered in light of the level of functioning in reading of these two groups. Group A has mastered the decoding phase of reading and is involved in using more complex vocabulary and comprehension skills. Group B, however, has not mastered decoding and is more involved in using perceptual and sequencing skills.

An analysis was also made of the two groups' oral reading errors. Similar patterns of oral reading errors were found with two exceptions—Group A had more dialect errors and Group B had

more omissions, probably due to their lower level of proficiency in reading.

This comparison of the two groups of children highlights the fact that, while one group is succeeding and the other is not, there are many other differences between the two groups which must be considered if one is going to engage in effective individualized, diagnostic instruction with them.

Implications

The purpose of doing this study was to provide some information concerning the strengths and weaknesses of these two groups of children and to plan appropriate instructional procedures for them for the following school year. One of the major findings was the significantly higher mean intelligence test score on the Stanford-Binet Test for Group A. This probably accounts for much of their superior success in reading. The interaction of these children's innate potential with their environment and past experiences has been such that they now have more of an aptitude for learning. This has led them to experience more success in school, giving them more confidence and motivation concerning school related activities. The important question which follows is what can be done to help the type of children in Group B achieve success in reading. One possibility is to provide earlier intervention in their lives with specific, highly structured perceptual and language activities. It would seem that perceptual training, both visual and auditory, with an emphasis on sequencing and immediate memory span would be especially valuable. The children who are weakest in this area appear to be the same children who are having the most difficulty mastering the decoding phase of reading.

Further investigation needs to be undertaken to ascertain the reason for the significant difference between the mean verbal intelligence score (Binet Test) and the mean WISC Performance IQ score for Group A. Is this a function of test bias or are their performance skills (largely visual-motor perceptual and sequencing) really significantly less mature than their language skills? If the lat-

ter is true, why? Is there something in their early environment which hinders development of these skills? These questions should be investigated.

Other relevant questions related to the past history of these two groups: were they equal on readiness measures at Grade 1 when they were introduced to reading? If not, could something in the way of compensatory activities have been done for Group B *before* they were introduced to reading in order to increase their chances for success? The two groups have been instructed by different teachers and by somewhat different materials and methods. Would one method have been preferable for some of the children? Could this have been ascertained earlier?

For this particular group of children (Group B) who are currently in the fourth grade, remedial reading instruction concentrating on each individual child's weaknesses seemed essential. Although many of them have intelligence test scores below the national average for their chronological age, none of them is mentally retarded but most are not reading on the level predicted by their scores. Instruction designed to improve their visual sequencing skills and their oral language skills (expressive vocabulary and morphology in particular) has been prescribed. The classroom teacher has used activities and materials designed to accomplish these aims. In addition to their regular classroom reading instruction, several of the children are receiving individual instruction with volunteer reading tutors two or three days per week. The remainder of Group B is being instructed in small groups of five to six children each by the corrective reading teacher in the school. She sees the children three times per week and has concentrated particularly on phonics skills, basic sight vocabulary, and large amounts of reading from high interest–low vocabulary books. All of these children appear to have made growth in reading, although the standardized tests will not be given until later, so no gain scores can be reported at this time. The children in Group A have been instructed by their classroom teacher, who has emphasized vocabulary and comprehension skills. They have completed the fourth grade reader and are nearly through with *Wide Horizons, Book 4*.

This book has been challenging and interesting for them and has provided an opportunity for their teacher to combine instruction in reading and written language skills.

The diagnostic comparison undertaken in this study was successful in that it uncovered many basic differences between the two groups of children—those succeeding in reading and those not succeeding. Hopefully, the diagnostically based instructional procedures used with the two groups have been beneficial.

Specific Reading Disabilities of Disadvantaged Children

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AMONG THE MOST PRESSING CONCERNS in the education of disadvantaged children are those learnings which fall in the general area of language development. From the standpoint of specific classroom instruction, reading is generally regarded as being most singularly crucial.

Purpose of the Study

The emphasis upon the individual nature of learning has extended the concept of diagnosis from clinical concern for children with specific instructional disabilities to the general area of classroom learnings. Unfortunately, the label "disadvantaged," which has been adopted to describe an accumulation of varied characteristics, is too freely used to identify individuals who may in fact possess only a limited number of these characteristics. Thus, individuals or groups manifesting only the most obvious learning behaviors attributed to the "disadvantaged" are frequently considered to have all possible characteristics of this nature.

Through the same illogical reasoning, individuals or groups which have developed a given level of competence in terms of general reading achievement are frequently considered to have reached equivalent levels of growth in all aspects of reading skill development. In addition to being inconsistent with research findings, this is, of course, incompatible with a diagnostic approach to the teaching-learning situation.

In an attempt to clarify at least one aspect of the larger problem, a study was designed to identify specific reading skill development among children generally described as disadvantaged.

Procedures

The population for this study consisted of 1,057 children in grades three through six in two elementary schools in New Orleans (*1*). During the month of October 1966, each subject was given an appropriate level of the Reading Subtest of the Metropolitan Achievement Test (MAT) and the Silent Reading Diagnostic Tests (SRDT) by Bond, Clymer, and Hoyt, as well as the California Test of Mental Maturity (CTMM), Long Form. Since each of these is intended for group administration, the subjects were tested in intact classroom groups.

The California Test of Mental Maturity is designed to determine the rate and scope of mental development of five factors: logical reasoning, verbal concepts, spatial relationships, numerical reasoning, and memory. Within these factors, the test units are grouped into two sections, Language and Non-Language. The Reading Subtest of the Metropolitan Achievement Test provides a measure of general ability in reading comprehension, while the Silent Reading Diagnostic Tests are designed to evaluate specific areas of word recognition. The SRDT provides information concerning the location within a word where the child tends to make errors in silent reading, as well as measures of ability to recognize words in isolation and in context, to locate root words and other word elements, to syllabify, and to synthesize words. In addition, knowledge of word elements, beginning sounds, rhyming sounds, and letter sounds are also evaluated.

Analysis of the Data

Computer histogram analyses of the raw score data obtained from this testing were made by class and grade level for each school and for the combined schools (*2*). This type of analysis was selected because it provided a methodology for the visual, as well as statis-

tical, examination of 1) score distributions; 2) means, quartiles, and ranges; 3) comparisons among classes at a given grade level; and 4) individual pupil disabilities and strengths. It was therefore useful to the project teachers as well as to the investigators. For purpose of analysis, data obtained from the eleven subtests which comprise the SRDT were combined into the five diagnostic categories suggested in the test manual: Recognition Pattern (Words in Isolation, Words in Context); Orientation (Reversible Words in Context); Visual Analysis (Locating Elements, Syllabication, Locating Root Words); Phonetic Knowledge (Word Elements, Beginning Sounds, Rhyming Sounds, Letter Sounds); and Word Synthesis. (Due to limitations of space, the computer histograms are not included here. Sample copies may be obtained from the authors upon request.)

These data were then considered in terms of the percentage of pupils in each grade scoring at or above grade placement level on the SRDT. Reading expectancy levels based on IQ's obtained through the administration of the CTMM were computed for each grade group (*3*). From these data, the percentages of expectancy level achievement were computed for mean grade scores on the Reading Subtest of the MAT and the five subtest categories of the SRDT.

Findings

Data presented in Table 1 show that Visual Analysis skills tended to develop at a rate consistent with relatively normal growth for these pupils. However, development in all other areas almost consistently decelerated, as indicated by the succeedingly smaller percentages of children who met the grade level criteria for reading achievement.

As shown in Table 2, the mean grade equivalent score obtained on the Reading Subtest of the MAT at each grade level was not only lower than the chronological grade equivalent score but also lower than the reading expectancy level.

While pupils at the third grade level were not generally retarded in any silent reading skill, Table 3 indicates the extent to which disabilities in specific diagnostic categories became increasingly severe at succeeding grade levels. The single exception in-

TABLE 1

PERCENTAGES OF PUPILS SCORING AT OR ABOVE GRADE LEVEL NORMS ON SILENT READING DIAGNOSTIC TESTS (SRDT)

Subtest Category (SRDT)	*Grade*			
	III	*IV*	*V*	*VI*
Recognition Pattern (Tests 1 and 2)	36	31	20	05
Orientation (Test 3)	35	26	27	21
Visual Analysis (Tests 4, 5, 6)	47	37	43	44
Phonetic Knowledge (Tests 7, 8, 9, 10)	24	09	10	04
Word Synthesis (Test 11)	60	17	07	03

TABLE 2

EXPECTANCY LEVELS, MEAN READING SUBTEST SCORES (MAT), PERCENTAGES OF EXPECTANCY LEVEL ACHIEVED

Grade	*Expectancy**	*Mean Grade Equivalent Reading Subtest* (MAT)	*Percentage of Expectancy Level Achieved*
III	2.8	2.5	89
IV	3.6	3.1	80
V	4.3	3.5	81
VI	5.4	4.4	80

* Based on Formula: (Years in School × IQ) + 1.0.

volved those skills concerned with the ability to use visual approaches to word recognition (Visual Analysis).

In the general area of word recognition techniques, the greatest strengths were found in the area of visual analysis, and the most severe disabilities were found in the area of phonetic knowledge. It would also appear that those visual analysis skills which were

TABLE 3

PERCENTAGES OF EXPECTANCY LEVELS ACHIEVED ON SUBTEST CATEGORIES (SRDT)

Subtest Category (SRDT)	*Grade*			
	III	*IV*	*V*	*VI*
Recognition Pattern (Tests 1, 2)	100	92	77	68
Orientation (Tests 3)	100	86	74	68
Visual Analysis (Tests 4, 5, 6)	104	100	93	93
Phonetic Knowledge (Tests 7, 8, 9, 10)	93	80	81	74
Word Synthesis (Test 11)	110	92	83	74

acquired were not sufficient for effective word recognition, word synthesis, or comprehension.

From these findings, it is clear that disadvantaged children with restricted levels of competence are not necessarily retarded in all areas of reading skill development. In fact, they frequently possess specific strengths in reading skills. It is equally clear that specific diagnostic information must be obtained if appropriate instructional strategies and effective remedial prescriptions are to be developed for children classified as disadvantaged.

NOTES

1. The New Orleans Education Improvement Project (NOEIP) provided the setting for this research. This project, funded by the Ford Foundation, was established as a compact of schools and colleges to improve the education of disadvantaged children in two intact elementary schools in New Orleans. The authors served as consultants to this project at the time during which the research reported in this paper was conducted.
2. The New Orleans Education Improvement Project began its first operational school year in September 1966. During the fall of 1966, attention was also directed to the collection of base line data concerning pupil demographic,

aptitude, and general achievement variables. Statistical analyses of these data revealed that the pupil populations of the two NOEIP schools were drawn from a homogeneous economic, social, and ethnic population and that these pupil populations were equally homogeneous in terms of academic performance. No significant differences were found between the means of the two school populations in any variable tested.

3. Expectancy levels were computed based on the formula: Years in school × IQ + 1.0, as suggested by Guy L. Bond and Miles A. Tinker in *Reading Difficulties—Their Diagnosis and Correction.* New York: Appleton-Century-Crofts, 1957, 78.

Factors Related to Reading of Children Referred to a University Reading Clinic

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THE READING CLINIC of the University of Georgia accepts any child from the state of Georgia for diagnostic evaluation. A few children outside of Georgia are also referred. In general, a child is referred by a school system because school personnel believe that the child is disabled in reading. The referral may be initiated by parents, family service groups, or others; however, cooperation between the school and the clinic is an essential aspect of the evaluation.

This study is an attempt to analyze more carefully the results of some of the evaluative materials used by the Clinic. It correlates results from the Stanford-Binet Intelligence Scale, the Peabody Picture Vocabulary Test, and an Informal Reading Inventory.

The population in this study consisted of 177 children, 136 boys and 41 girls, from grades three, four, five, six, and seven. There were 45 third graders, 37 boys and 8 girls; 43 fourth graders, 31 boys and 12 girls; 20 fifth graders, 19 boys and 1 girl; 32 sixth graders, 21 boys and 11 girls; and 37 seventh graders, 28 boys and 9 girls.

Population was diversified, representing large urban areas, small cities, small towns, and rural areas. Children were from homes that ranged from very culturally deprived areas to those of wealth.

These children, as children referred to most clinics, were, as a group, average on intelligence. On the Stanford-Binet the total group had an average IQ of 98 with a S.D. of 15, and with the Peabody Picture Vocabulary Test they had an average of 99 with a S.D. of 16. Males averaged 99 with a S.D. of 15 on the Binet, and 101 with a S.D. of 15 on the Peabody. Females averaged 93 with a S.D. of 14 on the Binet, and 93 with a S.D. of 16 on the Peabody.

There were no great variances from grade to grade. Average IQ's on the Binet ranged from 101 in grade three to 93 in grade seven, and on the Peabody IQ's ranged from 103 in grade three to 94 in grade five. Broken down by grades and sex, scores ranged from 107 for grade three females to 87 for grade seven females on the Binet; and from 105 for grade three males to 87 for grade seven females. As smaller groups were examined there were some discrepancies, e.g. 11 points between the Binet (highest) and Peabody for grade three females.

On the Stanford-Binet these children ranged in intelligence quotients from 61 to 138, and on the PPVT from 60 to 167.

There are schools and individual teachers who use the Peabody Picture Vocabulary Test as a rapid method for initial evaluation of intelligence. Others use it as a supplementary measure for older children with low reading skills who have been measured by one of frequently used group intelligence tests.

Our concern is the accuracy of this measure. Are teachers placing dependence on an instrument that is inaccurate for this group? All children tested by the clinic in grades three through seven inclusive, who had been administered the Stanford-Binet Intelligence Scale, Third Edition, the Peabody Picture Vocabulary Test, and an Informal Reading Inventory, were included in the study.

First, the correlation of the Binet and the Peabody were examined. These correlations were made for the total group, for total boys, for total girls, for each grade, and for boys and girls at each grade level.

For these groups of disabled readers the correlations give some specific information. The correlation between the Stanford-Binet Intelligence Scales and PPVT was significant at the one percent level for the total group of 177 disabled readers, for all boys, for all girls for all grades, for boys at all grades, and for girls in grades six and seven. The correlations for girls in grades three and four were significant at the five percent level. In grade five there was only one girl, therefore there were no correlations in this category.

The Clinic is concerned with individuals, therefore, group correlations may be misleading. Further analysis of the data was made to determine if individuals differed from the groups. Ninety-two

children had higher Peabody scores than Binet scores. The average difference was slightly over 11 points. The range of difference was 1 to 69, one in the sixties, and two in the thirties. Broken down, 52 were one to ten higher, 26 were eleven to twenty higher, and 14 were twenty or more points higher than the Binet.

Seventy-nine of these children scored higher on the Binet than on the PPVT. The average difference of those scoring higher on the Binet was slightly less than ten points. There were 44 children scoring one to ten points higher, 27 scoring eleven to twenty points higher, and 8 scoring twenty-one or more points higher than the PPVT. The difference in scores ranged from 1 to 30. Six children scored the same on the two tests.

To examine the data further, the Stanford-Binet and PPVT were correlated with reading disability.

The reading level was determined by several measures. The part related to this study was measured by an Informal Reading Inventory. The inventory is based on a series of basal readers using 200-300 words for silent reading and approximately the same amount for oral reading at each level. Success or passing is determined by 75 percent comprehension in silent reading and 95 percent accuracy in oral reading.

Reading disability was determined by the difference between the IRI and grade level plus one-half year. In this phase of the study intelligence was not considered in determining reading disability. This limitation is recognized, but IQ measures indicated that it would approximately average out. In a later study an attempt will be made to determine if intelligence modifies the result.

Correlations were run to determine whether there was greater significance between the Stanford-Binet and reading disability or the PPVT and disability. As anticipated, correlations were negative.

In general, the Stanford-Binet had greater significance than the PPVT. As in the other parts of this study, larger groups tended to have greater significance.

Significance was at the one percent level with both tests for the total group, 177 children, and for the males, 136 children. Coefficient of correlation, however, for the Binet was much higher than for the PPVT. The correlation for females with the Binet was

TABLE 1

COMPARISON OF THE STANFORD-BINET AND THE PEABODY PICTURE VOCABULARY TEST

			Stanford-Binet		*PPVT*	
Group	*N*	*r*	$\overline{X}$	SD	$\overline{X}$	*SD*
All	177	.62433*	97.7261	14.7736	98.8515	15.9010
Grade 3	45	.53130*	100.7333	13.2620	103.2444	14.4146
Grade 4	43	.57606*	100.3488	15.0695	102.0233	20.1583
Grade 5	20	.83746*	94.8500	16.9962	93.9500	16.3690
Grade 6	32	.61049*	96.2813	12.6803	95.4375	13.7182
Grade 7	37	.67006*	92.7568	15.9903	96.4865	19.4217
All Males	136	.60946*	99.1965	14.6024	100.7205	15.4244
All Females	41	.61424*	93.1757	14.4633	93.0676	16.0644
Male 3	37	.58430*	99.3514	12.4860	104.6757	13.6810
Female 3	8	.69618**	107.1250	15.7157	96.6250	16.8093
Male 4	31	.56455*	102.9032	15.4647	103.1290	17.5361
Female 4	12	.68801**	93.7500	12.2038	99.1667	26.4672
Male 5	19	.84106*	94.2105	17.2130	93.7368	16.7890
Female 5			ONLY 1 FEMALE			
Male 6	21	.59111*	96.0000	10.8074	94.9048	14.5186
Female 6	11	.69413*	95.8182	16.2593	96.4545	12.6520
Male 7	28	.63683*	94.7143	17.1612	99.5357	18.6875
Female 7	9	.81571*	86.6667	10.0747	87.0000	19.6214

* Significant at the 1 percent level.
** Significant at the 5 percent level.

significant at the five percent level, but there was no significance with the PPVT at the five percent level.

The children, as in the first part of this study, were grouped by grades and sex to determine the relationships with these specific groups. Significance was measured with the Stanford-Binet, the PPVT, and the Informal Reading Inventory using the same group.

Correlations with the total grade three, with grade three boys and with grade three girls, were not significant. When the Binet was correlated with the IRI, significance was at the one percent level with the total group of grades four, five, six, and seven and with

TABLE 2

CORRELATIONS OF THE STANFORD-BINET AND THE PPVT WITH THE INFORMAL READING INVENTORY

Group	N	*Binet & IRI* r	*Peabody & IRI* r
All	177	.403*	.302*
Grade 3	45	.107	.196
Grade 4	43	.499*	.376**
Grade 5	20	.621*	.598*
Grade 6	32	.498*	.226
Grade 7	37	.611*	.385**
All Males	136	.465*	.346*
All Females	41	.248**	.213
Male 3	37	.173	.209
Female 3	8	.027	.015
Male 4	31	.565*	.511*
Female 4	12	.511	.167
Male 5	19	.609*	.619*
Female 5		ONLY 1 FEMALE	
Male 6	21	.376	.081
Female 6	11	.678**	.541
Male 7	28	.694*	.390**
Female 7	9	.545	.664

* Significant at the 1 percent level.
** Significant at the 5 percent level.

males in grades four, five, and seven. Correlations were significant with grade six females at the five percent level.

In sub groups, correlations with the PPVT and the IRI were significant at the one percent level with the total grade five, and with males of grades four and five. Significance at the five percent level was found with the total of grades four and seven, and with grade seven males.

With a total of seventeen different groups, when reading disability was correlated with the Stanford-Binet, nine groups were significant at the one percent level, two groups were significant at the

five percent level, and with six groups there was no significance. With the PPVT only five groups showed significance at the one percent level, three at the five percent level, and with nine groups there was no significance at these levels. With individuals there was even greater variation.

Summary

For the group of children, grades three through seven, referred to the University of Georgia Reading Clinic, the PPVT correlates closely with the Binet. In general, with larger groups, significance was high. However, with small groups and with individuals there was a wide variation. With individuals disabled in reading, the PPVT should be used with discrimination in evaluating intelligence.

Informal Reading Testing: Historical Review and Review of the Research

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DURING THE SECOND AND THIRD DECADES of this century the standardized test was in its heyday. But writers of the late teens and early twenties sensed some inadequacies of the standardized tests; there were not enough of them to relate properly to every school curriculum and there were not enough tests with equivalent forms to measure short term changes in achievement. William S. Gray (*1*), writing in 1920, was one of the earlier writers who commented on the values of informal reading achievement tests.

It should be noted that reading problems were viewed differently in 1920 than they are today. Many writers held the view that faulty reading performance was based to a considerable degree upon faulty or poor eye movements. The relationship was considered to be causative; children read below what might be expected of them because their eyes did not move correctly. Poor eye movements were seen as a problem because they effected speed of reading, and this was considered by some to be the most important factor of total reading performance. Obviously this concern with rate of comprehension determined the observations made by an examiner during the administration of a reading test. While the literature contained some discussions of other types of reading errors and their treatment, the major focus was on eye movements and their improvement.

As professional scholars and writers advanced their thinking and experience in the analysis of reading performance, the literature showed that they were moving in the direction of a more detailed analysis. The third chapter of a book by Clarence Truman Gray (*2*:57-58) provided some interesting data on the results of reading tests.

Errors in Oral Reading. Such tests as Gray's and Price's make it possible to study in detail the errors which children make in oral reading. Such a study has been made by McLeod. This indicates clearly that gross mispronunciation is the most common error for the first grade, while substitutions are next in order.

In the second grade, substitution is the most characteristic form of errors. McLeod is of the opinion that this change in the type of error may be due to a change of method in the reading used by the first and second grade children. The change depends upon a shifting of attention from the individual word to groups of words. A second suggestion given by this author is that at this stage, as well as in the third and fourth grades, the pupil has a limited knowledge of a large number of words, but that this knowledge is not sufficiently intimate for him to be certain of his recognition.

In the third and fourth grades, minor mispronunciations assume second rank. This type of error, according to the author, occurs more often than gross mispronunciations, because the child is beginning to use his ability to analyze words, and this ability makes his pronunciation correct in most respects. The table shows, furthermore, that in grades five, six, seven, and eight the relative frequency of the various types of errors is much the same.

Harry Grove Wheat (*3*:212-213) published a book in 1923 entitled *The Teaching of Reading.* In this book Wheat provided an example of testing which teachers might follow.

In October pupils were tested to ascertain the oral-and silent-reading rate of each individual. Five oral and five silent trials were made, and the averages obtained and used as measures of reading rate. The pupils were then asked to read as much as possible in a minute without making any mistakes. With but one exception the rapid readers made fewer mistakes. Comprehension was tested informally. Rapidity and comprehension seemed to go together.

Wheat (*3*:337-338) offered this guidance to teachers faced with the problem of organizing a classroom for reading instruction:

> Upon taking charge of the instruction in reading of a grade or group of grades, the teacher should proceed immediately to the task of determining the standing of each pupil in the subject. The teacher should know first of all how well each pupil can read orally and how well silently. The reading periods of the first week of school may very well be spent in giving tests in the two kinds of reading, though the pupils do not need to be made aware of the fact that they are being "tested." The work of testing may proceed as follows:
>
> *In oral reading*: For the pupils of each grade choose three paragraphs for oral reading—one from their reader of two years ago, one from last year's reader, and one from their reader of this year. The first paragraph should be very easy; the second, easy; and the third, of average difficulty. Test the pupils individually in a quiet place where they will be free from distraction and where the remainder of the pupils to be tested will not hear the reading. When everything is in readiness show the first paragraph to the pupil and say: "I should like you to read this paragraph for me. If you should find some hard words, read them as best you can without help and continue reading. Begin when I say 'Begin.'" Hand him the book and say "Begin." When the pupil has finished show him the next paragraph, and so on. Keep a record of the time taken to read each paragraph and of the number and kinds of errors.

Wheat also provided guidelines for measuring silent reading performance. Wheat's book contained a quotation from a 1919 book by E. M. Bolenius (*4*:25-26).

> A great range of individual variation at the end of the year would be a sign of inefficient teaching, because it would show that the teacher did not correct the deficiencies in the class. At the beginning of the year, however, it would serve to diagnose the weaknesses of the class.
>
> A test shows who needs the drill work, and therefore limits drill for a definite purpose. When a pupil is up to the standard there is no reason for requiring this drill work of him; the time should be put on something more valuable for him. Concentrate on the ones who need the drill. The tests will show you which pupils need to work for speed and which need training in grasping the content (or ideas), because they are superfi-

cial readers. If a child reads fast at the sacrifice of ideas, he must be "slowed up" and by questioning be taught to get the ideas.

The following standards for silent reading are suggested:

	Rate	Content
Grade 4	160 words a minute	50 percent of the ideas in a 400-word passage
Grade 5	180 words a minute	
Grade 6	220 words a minute	
Grade 7	250 words a minute	
Grade 8	280 words a minute	

The Bolenius publication is of special interest for two reasons: it provides some criteria against which to judge a child's reading performance, and it reflects the discussion current at the time about the effect of good teaching—whether it tended to increase or decrease range of achievement within a given classroom. That same year, 1919, Zirbes (*5*) indicated that she had just become convinced that the effect of teaching was to increase the range of reading achievement for children receiving the same instruction.

In the following decade and a half there was a dearth of significant publications related to the IRI. One can almost imagine a period of contemplation by the leaders in the field of reading. Certainly they were very much aware of the potential of an informal reading test, but they needed time to give it careful consideration, to experiment and develop guidelines for its administration, and to study the data it provided to develop the subjective framework within which a reading performance could be evaluated. Then, bits and pieces of the puzzle were provided by many people; some long remembered for their contribution, and others now virtually forgotten.

The NSSE 34th Yearbook titled *Educational Diagnosis* contained a chapter by Marion Monroe (*6*) on the diagnosis and treatment of reading disabilities, but it did not give significant space to informal tests.

Late in 1934 Edward L. Thorndike (7:124-125) published

three sections of a lengthy article, "Improving the Ability to Read." He used data collected through use of the Thorndike 10,000 Word List as applied to a discussion of readability of supplementary reading materials. Thorndike said,

> . . . Many of the books are too hard in respect to vocabulary. These pupils will meet two or three words per page that baffle them. They are not able to make a satisfactory guess from the context, and must use a dictionary or glossary, or dictionary and glossary, or suffer frustration. The reading is then work rather than play. At the beginning of Grade 4, the mere mechanics of reading words which they know as sounds is for them almost hard enough to prevent enjoyment. Two or three frustrations per page from unintelligible words may make the difference between enjoyment and discomfort.

In a further discussion of factors associated with a child's ability to read a book independently, Thorndike (*8*:229-230) said,

> . . . The vocabulary load is the chief force opposing comprehension. We must know what it is in order to make good use of a book in helping pupils to read.
>
> A second desideratum is that words unknown to the reader should occur only rarely. A reasonable standard is not over 1 in 200.

Thorndike's work and his conclusions of ways to expose children to more new vocabulary—he was suggesting wide reading is better than use of basal readers—led to suggestions which could be converted into criteria for judging the adequacy of a child's reading performance.

In 1936 Arthur I. Gates (*9*) published *The Improvement of Reading*. In this book Gates frequently used the phrase "educational inventory," though he was not discussing the use of informal tests. Gates suggested that tests of reading attainments should include word recognition, sentence reading, silent paragraph reading, oral reading, techniques of reading context, and techniques of working out recognition and pronunciation of isolated words. He also indicated that "the materials should be of proper difficulty," but he gave no criteria for making this judgment.

The Prevention and Correction of Reading Difficulties was published in 1936 by Emmett Betts (*10*). Under the heading "Observations" Betts outlined in considerable detail three areas under which clues to behavior might be observed during the administration of tests: educational factors, physical factors, and social attitudes. Further on in the book Betts (*10*:98) had this to say:

> Oral reading tests, either formal or informal from standard readers, provide needed evidence. An experienced examiner can note use of context clues and deficiencies in word analysis as well as tendencies to reverse forms, to repeat, to omit, and to substitute. Not infrequently, children can arrive at the meaning of a silent reading selection and still evidence extremely faulty oral reading.

Again, while no specific criteria for judging reading performance are provided, and while we find no use of such terms as independent and instructional levels, we can ascertain that the use of regular instructional materials, notably basal readers, were recognized as valid test materials. While the suggested observations do not describe the format of the IRI, it is known that by this time Betts had mimeographed test materials and had experience in working with teachers so that he could set up symptoms for them to detect.

In 1936, William Young (*11*) published an abstract of his doctoral dissertation: "The Relation of Reading Comprehension and Retention to Hearing Comprehension and Retention." This study was done at the State University of Iowa quite probably while Betts was also a doctoral candidate there. The study asked a number of provocative questions about the relationships indicated in the title, and took note of previous work done by Yoakam. Out of this work came the understandings basic to the description of listening comprehension level, which is so vital to an examiner as an estimate of the level at which a given child should be able to read independently.

Durrell's (*12*:333) 1937 article moved another step closer to the description of the IRI administrative format. He had this to say:

> *Books for the Primary Grades.* To determine whether the difficulties of word recognition in a given book do not make

> it unsuited for a particular child, the child may be asked to read orally from it a selection he has never read before. The selection should be approximately one hundred words long. A record should be made of the number of words that the child finds difficult. The child should be prompted on difficult words after an error or a five-second hesitation, so that he will not make errors through unnecessary confusion or delay on a single word.
>
> We have no experimental evidence as yet in regard to the proper vocabulary load for children with different levels of mental ability. If the child's learning rate is determined experimentally by measuring the number of new words that he can learn daily, the number of difficult words in the daily lesson can be adjusted to that learning rate. In the usual classroom practice, it appears that children find difficulty in mastering material containing more than one difficult word in twenty running words. Some authorities hold that even this moderate number of new words is an unwise, and often unsafe, vocabulary burden for most children unless their reading development is checked and directed with exceptional frequency and skill. Independent silent reading ordinarily requires even easier material, unless the child has unusual skill in word analysis.

Durrell (*13*) followed this description with the following statement in 1940:

> Informal tests based upon the reading materials used in the classroom and charts of faulty habits provide the best basis for planning effective instruction.

The volume of publications by Betts on the analysis of reading problems and related topics is considerable. One study of particular note appeared in 1941. The point of interest is the term "subjective reading inventory" that Betts (*14*:738) used then.

> The subjective reading inventory was given individually. No check was made on the reliability of this inventory, which was taken by an experienced graduate student who is a member of the reading clinic staff.

Many thinkers, convinced of the value of informal reading tests, contributed to the gradual development of the technique

that came to be called the Informal Reading Inventory. Like so many advances in learning, certain key studies had to be made, and conclusions based on experience in the classroom expressed before the IRI could emerge. That the collation of these thoughts and ideas received articulate expression is a tribute to the drive and dedication of many, but most especially to Emmett Betts. By 1942 the IRI was a valuable tool in the reading clinic at Pennsylvania State College. But as is so often the case, those who espoused the IRI were questioned by doubters. The time was ripe for carefully done research. Could the IRI accept the challenge and survive?

The Research

"A Study of Relationships Among Certain Pupil Adjustments in Language Situations" was the doctoral dissertation of P. A. Killgallon (*15*), a student of Betts. It was completed in 1942. This study has assumed a position of significance because it was the first to assign specific criteria for defining the various reading performance levels: basal reading level, probable instructional level, probable reading capacity level, and the probable reading frustration level. The Killgallon criteria for the various levels are summarized below.

Basal Reading Level—Minimum comprehension of 90 percent

Oral Reading characterized by

1. Proper phrasing and rhythm
2. Observation of punctuation
3. Adequate interpretation of meaning
4. Freedom from word-perception errors
5. Correct pronunciation and clear enunciation

Silent Reading characterized by

1. Adequate rate of comprehension
2. Freedom from pointing, etc.

Probable Instructional Level—Minimum comprehension of 50 percent

Maximum ratio of word-perception errors of one to fourteen (approximately 7 percent)

Probable Reading Capacity Level—Minimum comprehension of 75 percent (Listening)

Probable Frustration Reading Level—Comprehension score of 20 percent or lower
Word-perception error ratio of one error to each ten running words.

Just how were these criteria developed? The evidence is conflicting, and Killgallon must accept the responsibility for this confusion. For example, on page 9 of his study he said, "Criteria for defining the probable instruction level, the probable frustration level, and the probable reading capacity level were arbitrarily established by the investigator in connection with the Informal Reading Inventory." But later in the study, on page 102, Killgallon said, "With this in mind, the criteria outlined below were established after preliminary trial of the Informal Reading Inventory and were observed in making the ratings in the present study."

Killgallon had previously noted that the IRI used in his study was in extensive use at the Pennsylvania State College Reading Clinic and was the test used by Betts (*16*) in a study cited previously. The actual test materials were made up from two different basal reader series. The record forms included in the appendix of Killgallon's dissertation did not state specific criteria for the various performance levels but did have space for recording the examiner's judgment. This mystery is further heightened as a result of some personal correspondence this author has had with Betts who said, ". . . This study was done after we had been using mimeographed materials, etc., for teaching the informal inventory. Hence, I would assume that he used criteria we had originally set up."

Why was the establishment of definitive performance criteria necessary for the Killgallon study? He used the Gates Reading Survey, Grades 3 to 10, to gather data for use in computing reading ages

and reading grades of all the fourth grade children used in his study. As a sort of spot check on the validity of these data, the Informal Reading Inventory was administered to every fifth pupil, 41 in all, on the ranked distribution of Gates Survey reading ages. Like many other investigators before and after him, Killgallon concluded that standardized tests tend to overrate the instructional level of children at this age.

Later researchers have tended to criticize Killgallon for his "arbitrary" determination of the performance criteria as though they were figures plucked from thin air or selected from a table of random numbers. But if we remember some of the writings examined earlier, it is apparent that there may have been some basis for Killgallon's decisions. At the independent level we have Thorndike's comments about vocabulary load and satisfaction gained from successful reading and his criteria for acceptable level of comprehension expressed in 1915 when he said, "This calculation gives the degree of difficulty that the class can read with 80 percent of correct answers. This can hardly be taken as an adequate reading for purposes of acquiring knowledge or enjoyment."

The development of the criteria for the probable instructional level may well have been based on the Bolenius "50 percent comprehension" and the Durrell "more than one difficult word in twenty running words" comments quoted earlier. While it is true that Killgallon started with a different word-perception error criteria, 93.9 percent, he did shift to 95 percent in his final conclusions. The probable explanation for this shift is explained on pages 165 and 166 of the study and is a reflection of the mean percent of the errors at instructional level, which was 5.1. This figure, rounded off to something useful and practical for use by classroom teachers, becomes the same as that suggested by Durrell in estimating instructional level to the nearest whole grade level through the use of basal readers. The decision for the shift from 50 percent comprehension level to 75 percent may be partially explained by the fact that the mean comprehension score at the instructional level was 71 percent. These data are presented on page 162 of the study.

Whatever the mechanisms involved in the first expression and modification of the Killgallon criteria, we should not forget they

have been fairly well validated through use. Killgallon knew they were tenuous for a number of reasons, and his suggestions for further research reflected this awareness. But it was necessary to start somewhere; someone had to be the first to commit himself. That there has been relatively little dissatisfaction or pressure for change based on valid research is all the more tribute to the man who took this first giant step.

In 1952 at Boston University, J. Louis Cooper (*17*) completed the dissertation, "The Effect of Adjustment of Basal Reading Materials on Reading Achievement." Cooper's study had three purposes: 1) to determine the relationships that exist between the degree of basal reading materials and gain in reading achievement; 2) to investigate the feasibility of using symptoms of reading difficulty evinced in certain materials as a basis for predicting suitability of reading materials for instructional purposes; and 3) to formulate criteria that may be used as a basis for appraising the level of reading material that is most suitable for systematic reading instruction.

Cooper used standardized tests as measures of initial achievement and gain at the end of the experimental period, and an Informal Reading Inventory built from the current instructional materials to record the symptoms of reading difficulty exhibited by each child. At the end of the six-month experimental period each child was retested with the standardized tests, and the total group was sampled to test the stability of the adjustment of reading materials.

At both the primary level (grades two and three) and the intermediate level (grades four, five, and six) Cooper identified the group making the greatest amount of progress in reading achievement as those characterized by 0-2 word-perception errors per 100 running words. He labeled this group as placed in "suitable" instructional materials. The group making 7 or more errors per 100 running words (primary level) and the group making 11 or more errors per 100 running words (intermediate level) he labeled as placed in "unsuitable" instructional materials. Acceptable comprehension levels were set at 70 percent and 60 percent for the primary and intermediate groups, respectively.

Cooper's data would seem to support the contention that children placed in instructional materials where their performance is

within the more stringent criteria for instructional level do progress more rapidly in reading achievement. It should be noted that his changed criteria for comprehension were based on the group making the greatest gain in reading achievement, and that this procedure is strikingly similar to the procedure used by Killgallon. While Kender (*18*) has claimed that Cooper's criteria were more scientifically derived, Powell (*19*) has criticized the study on methodological grounds. As usual, we must conclude that further study is necessary. The Cooper study is a notable one, unquestionably. It is unique in its suggestion for upgrading the Killgallon criteria. Further, it is a springboard for further research.

"A Comparison of Standardized Reading Achievement Test Scores and Functional Reading Levels," a study by Edward Sipay (*20*) was completed in 1961. Using Cooper's study as a starting point, Sipay stated three null hypotheses about the differences between the level of reading achievement, as measured by a standardized reading test, and that determined by an Informal Reading Inventory. He studied this relationship at the instructional level, using Cooper's criteria for "suitable" and "marginal" performance, and at the frustration level through use of the Betts criteria. To carry out many of the secondary objectives, Sipay constructed two equivalent forms of an IRI and made comparisons with three well-known standardized reading achievement tests. He also gathered data on intelligence of his 200 subjects with a group intelligence test. Sipay (*20*:176) drew the following conclusions:

1. All three standardized tests, on the average, tended to overestimate the instructional level by approximately one or more grade levels when Criteria 96 were applied. Therefore, none of the standardized reading tests tended to suggest the most suitable material for reading instruction.
2. The Metropolitan Reading Test and the Gates Reading Survey, on the average, tended to indicate the instructional level when Criteria 90 were applied. Therefore, these standardized tests tended to suggest material which would be of questionable suitability for reading instruction.

It should be noted that Criteria 96 were Cooper's "suitable"

criteria and Criteria 90 were Cooper's "marginal" criteria. Sipay concluded, "The use of standardized reading test scores for the purpose of selecting the most suitable material for reading instruction does not appear to be warranted." While this was not a correlation study, one could argue that Sipay's work had failed to validate the IRI. The opposite side of this coin would be to ask, "How do you know a standardized test is really valid?"

Robert McCracken's study (*21*) was completed in 1963. Using data gathered through the analysis of three well known basal reading series, McCracken developed test materials which he considered to have high content validity. Employing the Betts performance criteria he corroborated this validity statistically by testing 664 children in grades one through six and by the subjective evaluations of twenty reading experts. Reliability was demonstrated by having two other examiners administer alternate forms of the Standard Reading Inventory to 60 children, 30 boys and 30 girls. These data were used to compute some twelve Pearson product-moment correlations. These correlations ranged from 0.99 to 0.68 with a median of 0.91.

It should be noted that while McCracken carefully studied several popular basal reading series to gain an understanding of their vocabulary and content, he personally wrote the test paragraphs. This is, of course, a violation of the original philosophy of the IRI —using test materials which the teacher intends to use for instruction. In this case, however, this procedure was necessary. The end product is a highly structured test and the ultimate in diagnostic instruments.

Kender's study (*22*) was completed in 1966. While few details are known to this writer, it is apparent that Kender studied the effects on the designation of instructional level through the use of three different informal reading tests scored by three different criteria. He used tests that had been found useful in determining the instructional levels of pupils. He found what he expected—significant differences among the means of the instructional levels made by the same pupils on the three different tests. Kender's bias for standardized tests is obvious and his criticism of this problem involving different tests, different accounting of significant errors, and different criteria is unfair; we have long known that it is dangerous

to compare the results of two or more standardized tests purporting to measure the same thing.

In 1968, William Powell (*23*) presented a paper titled "Reappraising the Criteria for Interpreting Informal Reading Inventories." It is his thesis that there are not valid research data to support the Killgallon criteria and that these criteria are unrealistically too high. Powell points out that there is not universal acceptance or agreement with what he calls the Betts-Killgallon criteria and, further, that agreement with them is dangerous because they are based on a study of 39 fourth grade children, much too small a sample. He summarized the situation.

> Since its origin, the informal reading inventory has undergone several modifications, both in terms of administrative procedure and of the percentages used to designate reading levels. Reading authorities have varied in opinion regarding the exact percentage at the instructional reading level. (Variance also occurs on the other levels, but this paper will focus only on the instructional level.) Percentages suggested for the lower limits of needed accuracy in word recognition and in comprehension, for example, are as follows, with word recognition first and comprehension second in each instance: E. A. Betts (and P. A. Killgallon), 95 and 75; A. J. Harris, 95 and 75; M. Botel, 95 and 75; R. A. Kress and M. S. Johnson, 95 and 75; M. C. Austin and M. H. Huebner, 95 and 75; L. R. Wheeler and E. H. Smith, 95 and 70; R. Karlin, 90 and 70; N. B. Smith, 80 and 70; and L. Cooper, 98 and 70 (primary), and 96 and 60 (intermediate). With few exceptions, even in those instances where the criteria have been modified, the Betts-Killgallon paradigm has been generally retained.

Powell provided an excellent review of several studies and indicated what he could show if he played with the raw data from some of them. He then presented his study which tested the hypothesis that the word-recognition criterion was lower than the 95 percent level. He gathered his data by examining 178 protocols of children gathered by three examiners other than himself. In his analysis of these data he concentrated on two components: word recognition and comprehension. Holding the comprehension score constant at 70 percent, he scanned the word recognition scores which

had achieved the required level of comprehension. Powell obtained a range of scores as might be expected. His assumption was that if the child's comprehension percent remained continuously at an acceptable level, then the fluctuation in word pronunciation errors was tolerable to the reader. Powell analyzed his data as follows:

> The data suggest that the mean scores of grades one and two tend to cluster together percentage-wise, and the mean percentages of grades three, four, five, and six form a relatively similar percentage zone. The data clearly indicate that pupils in grades one and two could tolerate *on the average* an 85 percent word recognition score and still maintain seventy percent comprehension. To say I found this astounding is an understatement! The finding that pupils in grades three through six could tolerate *on the average* a 91 to 94 percent word recognition score while maintaining 70 percent comprehension is commensurate *with the data* of Killgallon and Schummers. This finding was expected.

The key word in Powell's analysis would seem to be "tolerate." What does he mean by this? The IRI has always been considered an opportunity to observe behavior which might also serve to indicate a child's awareness of reading difficulty or tension. Killgallon suggested that in the presence of two or more signs of undue difficulty —excessive lateral head movement, finger pointing, various forms of atypical vocalization—the criteria should be stiffened to 75 percent or higher in comprehension (he was then working with 50 percent) and a new ratio of one word-perception error to each fifteen running words. McCracken recognized that some children can meet the quantitative criteria for word recognition and comprehension by paying a heavy price in extremely slow rate of reading; thus, he added a time criteria when he developed his test. Experienced examiners and teachers know that some children, realizing the evaluation time is relatively short, will not show some of the signs of tension during testing that they will exhibit over a long-term instructional program. This would appear to be the rationale which led Johnson and Kress (*24*) to suggest that often the criteria are too low. It would seem that the manipulation of data in this manner, while statistically respectable, is ignoring one of the major contributions

of the IRI which was developed in reaction to the lack of opportunity for observation of behavior in the administration of many standardized tests.

The Powell paper is an extremely valuable one because it clearly delineates the present development of the IRI and the many problems that must be attacked through research. One problem has to do with the criteria defining the various performance levels; instructional level must receive considerably more study. But comparative research cannot be accomplished until there is agreement on the factors of reading performance that will be evaluated; i.e., if you count repetitions some children would meet or exceed the specified criteria much sooner than they would if repetitions are not counted. Similar arguments could be developed for some of the other reading errors, or observed behaviors, that have been evaluated by some and not by others.

The Informal Reading Inventory can be administered at two different levels for two different purposes. The classroom teacher can give the test for the purpose of grouping children for instruction. This level of testing requires only a quantitative record of the reading errors; this level of testing has been described by Veatch as "the rule of thumb," assuming the 95 percent criteria is being used. The reading clinician needs considerably more profound information in addition to knowing the level at which the criteria are met. Gathering this information accurately requires detailed knowledge of the reading process, knowledge of child behavior, and considerable experience in test administration.

Will the classroom teacher and the reading clinician use the same test? Recently the trend has been to publish carefully developed informal reading tests; the McCracken and Silveroli tests are good examples. Can this be done safely, or do we get more valid results by developing test materials from the classroom instructional materials? What about the general administrative procedure? Should it employ oral sight reading or oral rereading of the same material for a different purpose as Betts now suggests? Certainly one could argue that the latter procedure more closely resembles the accepted procedure found in the guided reading lesson of most basal readers; we have reason to suspect that this approach would

give a generally higher oral reading performance by most children. Is this valid? What is the relation of testing procedure to criteria?

So many unsolved problems after so many years! We will not get the answers we need until we have agreement on criteria, sources of test materials, which word-perception errors are to be counted, and most importantly, studies of instructional programs based on specific criteria and evaluations of reading performance. There are many roads yet to travel. If we are to find some satisfactions along the way, we must somehow increase our sense of direction; we must also know that we do not travel alone, though often that seems to be the way to move the fastest. Is it really?

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The Validity of Informal Reading Testing

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ONE OF THE MOST SIGNIFICANT TASKS of the reading teacher or any teacher, for that matter, is the proper placement of pupils in their texts. In the millenium perhaps, all pupils will be placed properly in their reading materials by teachers who are sensitive to the desperate need for matching pupils and books.

While awaiting this momentus day there are some practical problems to face. Two related problems which have infrequently been treated together are

1. When a reading test is given to determine a pupil's instructional level, how much confidence can be put in this finding?
2. When a readability formula is used to determine the reading difficulty of a book (or article, etc.), how much confidence can be put in this finding?

Take an example. Suppose on a given reading test the reading instructional level of pupil A is determined to be high third. And suppose on a given readability measure Book B is found to be high third grade level in difficulty. Can it be certain that Pupil A can be effectively instructed by using Book B? Given the fact that the instructional level of a pupil is variously estimated by different reading tests and the reading difficulty of a book variously estimated by different readability measures, the answer is no.

A more appropriate question is, "Which reading test and readability measure provide the best estimate of match between pupil and book for the purpose of instruction?"

In order to answer this question, "proper placement in a book" must first be defined. In this study, proper placement is defined as reading orally in a book with at least 95 percent fluency on the

average *and* answering questions on the text with at least 75 percent accuracy on the average.

The fundamental purpose of this study was to develop a design for determining the validity of informal reading inventories. It has already been seen that this problem cannot be divorced from the question of the validity of readability measures. Indeed, the main assumption of this design is that measures of reading level and readability should be used to validate each other.

The following procedures elementally set forth the design of such a validation study using a basal reading series.

1. Select a graded reading series to establish the criterion, taking three samples of 100 words each from the reader and three comprehension pages from the workbook.
2. Determine the readability of each sample of reading material on one or more readability formulas.
3. Test pupils in the scaled sample pages to establish the highest level at which they get at least 75 percent comprehension on the average on the workbook exercises and at least 95 percent oral reading fluency on the average in the 100 word samples from the readers. Pupil performance on these materials was the criterion.
4. Test pupils on one or more reading tests that purport to determine their instructional levels.
5. Determine the intercorrelations among the reading tests and readability measures.
6. Determine the extent of match between the reading tests and readability measures.

The Pilot Study

A pilot study to determine the usefulness of this design for determining the validity of reading tests was undertaken.

The subjects were randomly selected from the entire fourth grade population (174 pupils) of the Lea School in Philadelphia after stratification on the basis of scores obtained on the SAT to in-

sure a sampling of below average, average, and above average readers.

The Criterion

The materials used to establish the criterion were the Scott, Foresman *New Basic Readers* and *Think-And-Do Books.*

After stratification and the elimination of inappropriate material, three samples were randomly selected from each of the readers and each of the workbooks with certain limitations.

In the *New Basic Readers*

1. Each selection was to contain at least 100 running words to simplify computational problems.
2. Only the first 100 words of each story were considered for possible selection.
3. To provide for stratification, each basal reader was divided into four parts. The first 100-word story from each of the last three parts of each reader was selected. (No samples were drawn from the first part of any of the readers, since the first several selections of any basal reader are not generally considered to be representative of that reader level but instead serve as a review of the previous level.)

In the *Think-And-Do-Workbooks*

1. Stratification was achieved by dividing each book into thirds and randomly drawing one sample from each third.
2. Only pages that could be used as comprehension measures for an informal reading survey were included for possible selection.
3. Some of the workbook exercises had to be eliminated from consideration for possible inclusion because
   a. The readability of some of the exercises could not be estimated by any of the currently available readability measures.
   b. Performance on some of the exercises assumed previous knowledge of story content in the readers.

c. Some of the exercises had fewer than four items which could be responded to and scored. A minimum of four items was regarded as necessary to differentiate a pupil's independent level from his instructional level when measuring comprehension.

The Readability Measures

The readability of each sample of reading material for the readers and workbooks was determined by four measures of readability: The level assigned to the readers and workbooks by Scott, Foresman; *The Spache Readability Formula,* primary grades measure *(9); A Formula for Predicting Readability,* an intermediate and upper grades measure *(5, 6);* and *Botel Predicting Readability Levels,* a wide range measure *(2, 3).*

Pupil Performance in the Materials (the Criterion)

Fourth grade pupils were asked to read in the scaled sample pages and, on the basis of their performance, an instructional level was determined. The instructional level was defined as the level at which the pupils could obtain at least 75 percent comprehension on the average on the workbook exercises *and* at least 95 percent fluency on the average on the reader passages.

Before working on the workbook exercises pupils were given directions, as suggested by the manual, and were asked to complete the selected workbook exercises independently. They continued working until their performance fell below 75 percent for two successive levels.

In the basal reader the pupils were asked to read orally at sight the sample passages from each of the readers. Word recognition errors (substitutions, omissions, insertions, nonrecognition, mispronunciations, and repetitions) were noted for each passage. Each pupil continued reading until his performance fell below 95 percent on two successive levels.

Reading Test Estimates of Instructional Level

Pupils were given three published reading tests which provide instructional level placement scores. The tests used were: Diag-

nostic Reading Scales *(8),* The Standard Reading Inventory *(7)* and The Botel Reading Inventory *(2, 3).* All three tests and the criterion materials were administered during the winter of 1968-1969.

The Problem of Restriction of Range in the Criterion and Reading Tests

In an earlier study *(1)* an attempt was made to determine the predictive validity of several reading tests, using as the criterion the pupil's placement in his reader at school. Care was taken to choose a school emphasizing proper instructional placement and mastery of skills in its reading program. However, the major limitation of this study turned out to be restriction of range. That is, many teachers did not place pupils' reading beyond grade level on their instructional levels but, rather, at their independent levels. For example, if a pupil scored two or more reading levels above his grade in school, he was usually placed in a reader on his grade level or, at the most, one year above his grade level.

The present study was designed in part to overcome the restriction of range encountered in the first study. To do this, pupil reading performance on reading tests was compared against a criterion free from the limitations imposed by teacher judgment and problems of classroom management. As already described, the new criterion consisted of the pupil's reading performance on a series of samples from a widely used basal reading series.

While this design is an improvement in terms of restriction of range, it does not completely eliminate the problem. The Scott, Foresman *New Basic Readers* and *Think-And-Do-Books* only extend to the sixth reader level. Therefore, a ceiling is placed on the criterion at that level. This ceiling is too low for those pupils measured on the sixth reader at performance levels of independence. It follows that their instructional levels are somewhere above the sixth reader level. It was not possible to determine the instructional levels for this group of pupils. In this study their instructional levels were estimated to be one level above the criterion ceiling, or at the seventh reader level. In an actual classroom situation, it would be a

valid educational decision to place a pupil on the next higher level in such cases.

In some cases, the ceilings of the reading tests were also too low for a few of the pupils taking part in the study. The same procedure was used to account for this problem; the pupil's instructional level was set one level above the highest possible reading grade score for each of the tests.

Comparison of Variables

Two basic types of comparisons were made among the variables.

1. *Correlations.* All reading test scores were correlated with all the readability estimates of the criterion.
2. *Matching.* The instructional levels given by the three reading tests were compared with the four readability estimates of the criterion for extent of match. That is, the extent to which each test placed each pupil at, above, and below his instructional level for each of the four readability measures of the criterion was determined.

Correlational Findings

Correlations were computed for the two types of measures investigated in this study, the reading tests and the readability estimates. The data were analyzed three ways to determine concurrent validity.

1. Correlations were computed between the reading tests and the readability estimates (see Table 1).
2. Intercorrelations were computed for the three reading tests (see Table 2).
3. Intercorrelations were computed for the three readability estimates (see Table 3).

Cronbach (*4*) contends, "It is very unusual for a validity coefficient to rise above .60 . . . ." A cursory inspection of all the concurrent validity coefficients obtained in this study (see Tables 1, 2, and 3) reveals that they all were indeed unusually high. They ranged from a low of .73 to a high of .94.

TABLE 1

CORRELATION[1] OF THE PERFORMANCE OF PUPILS ON THREE READING TESTS WITH THEIR PERFORMANCE ON THE CRITERION ESTIMATED BY FOUR READABILITY MEASURES

	Reading Tests			
Criterion	SRI[6]	BRI[7] WO	BRI[8] *Total*	DRS[9]
Combined Score[2]				
Publisher	.81	.78	.87	.77
Botel	.80	.88	.82	.86
Spache, Dale-Chall[3]	.82	.94	.88	.86
Comprehension[4]				
Publisher	.82	.82	.80	.78
Botel	.79	.86	.81	.86
Spache, Dale-Chall	.87	.90	.82	.90
Oral Reading Fluency[5]				
Publisher	.79	.89	.88	.82
Botel	.78	.88	.82	.86
Spache, Dale-Chall	.80	.92	.87	.85

1 BMDO3D (see other footnote Tables 1 & 2).
2 The highest level at which the pupil scored at least 75 percent in comprehension *and* at least 95 percent in oral fluency.
3 The Spache formula was used to estimate material below the fourth reading level and the Dale-Chall formula was used to estimate material including and above the fourth reader level.
4 The highest level at which the pupil scored at least 75 percent in comprehension.
5 The highest level at which the pupil scored at least 95 percent in oral fluency.
6 Standard Reading Inventory.
7 Botel Reading Inventory—Word Opposites Test.
8 Botel Reading Inventory—Total.
9 Diagnostic Reading Scales.

The performance of pupils on the three reading tests was correlated with their performance on the criterion estimated by the four readability measures (see Table 1). The obtained correlations were consistently high, ranging from .77 to .94. In terms of correlation, the best estimate of test-criterion correspondence was obtained by using Word Opposites Test of the Botel Reading Inventory with the Spache, Dale-Chall estimate of the criterion. In fact, the Botel

TABLE 2

INTERCORRELATION[1] OF THE PERFORMANCE OF PUPILS ON THE THREE READING TESTS

	BRI	DRS
SRI	.74	.88
BRI		.73

TABLE 3

INTERCORRELATION[1] OF THE PERFORMANCE OF PUPILS ON THE CRITERION AS ESTIMATED BY FOUR READABILITY MEASURES

	Publisher	*Spache or Dale-Chall*
Botel	.89	.92
Publisher		.92

1 BMDO3D—Correlation with item deletion—cersion of March 1, 1966, Health Sciences Computing Facility, UCLA.

Word Opposites Test consistently correlated higher than the other reading tests with the criterion, as estimated by all four readability measures.

The means for the Standard Reading Inventory and the Botel Reading Inventory were virtually of the same magnitude; while the mean for the Diagnostic Reading Scales was approximately one grade level higher than the other two tests. The standard deviations for all three tests closely approximated each other (see Table 4).

TABLE 4

MEAN SCORES AND STANDARD DEVIATIONS FOR PFRFORMANCE OF PUPILS ON THE THREE READING TESTS

	$\overline{M}$	*SD*
SRI	4.30	1.97
BRI	4.40	2.29
DRS	5.24	1.87

The reading test intercorrelations (i.e., test compared with test) revealed that all three tests probably measured the same thing (Table 2). The Diagnostic Reading Scales and Standard Reading Inventory measured oral and silent reading performance on graded, paragraph material; while the Botel Reading Inventory measured oral and silent reading performance on graded isolated words. The results of this study showed that the Diagnostic Reading Scales and Standard Reading Inventory were highly correlated with each other (.88), while they were correlated with the Botel Reading Inventory to a lesser extent (.73 and .74, respectively).

Matching Findings

Tables 5, 6, and 7 show that there is no one specific level of readability for a given book, nor is there a single reading level for a given pupil. For example, the readability of the selections from *Vistas* varies from an estimate of fifth level (publisher's estimate) to eighth level, as determined by the Botel readability formula.

It will also be seen that pupil number 9 (Table 5) scored at the fourth reader level on the Botel Reading Inventory, at the fifth level on the Standard Reading Inventory, and at the sixth reader level on the Diagnostic Reading Scales.

Since, given these results, the teacher is still very much in the dark with regard to proper pupil placement, something more is needed. That is, it must be determined which readability formula when matched with a given reading test, will most effectively place pupils. Tables 8, 9, and 10 provide such information for the pupils in this study.

A description of Tables 8, 9, and 10 is in order.

1. Each table shows how effectively the tests and subtests used in this study place the 29 fourth grade pupils in the criterion as estimated by the publisher, Botel Predicting Readability Levels, and Spache or Dale-Chall formulas. Effectiveness is in terms of correct placement or the extent of underplacement and overplacement based on the criterion.
2. Both the Standard Reading Inventory and Botel Reading Inventory (subtests and total) minimum and maximum instructional level scores are matched with the criterion.

TABLE 5

READING INSTRUCTIONAL LEVEL SCORES OF 29 FOURTH GRADE PUPILS ON THE CRITERION AS ESTIMATED BY FOUR READABILITY MEASURES AND BY THREE READING TESTS

	Criterion				*Pupil Reader Levels*						
					BRI				SRI		DRS
	Pub-			*Dale-*	WO		*Total*				
Pupil	*lisher*	*Botel*	*Spache*	*Chall*	*Min*	*Max*	*Min*	*Max*	*Min*	*Max*	
1	3[2]	6		5	3[2]	5	3[2]	4	3[2]	5	7
2	5	8		5	5	6	4	4	5	6	7
3	5	8		6	6	8	6	8	3[1]	4	6
4	P	P	1[2]		PP	PP	PP	P	PP	PP	1[2]
5	PP	PP	PP		PP	PP	PP	P	PP	P	3[1]
6	PP	PP	PP		1[2]	2[1]	1[2]	2[1]	1[2]	1[2]	3[1]
7	6	8		6	5	6	4	6	6	6	6
8	3[1]	4	3[2]		4	5	3[2]	3[2]	3[1]	3[2]	4
9	5	8		5	5	6	3[2]	4	4	5	6
10	2[2]	3[1]	2[2]		3[1]	3[1]	3[1]	3[1]	5	6	6
11	6	7		5	6	6	6	6	6	6	7
12	PP	PP	PP		PP	PP	1[2]	P	PP	PP	2[1]
13	3[2]	6		5	5	5	5	5	3[1]	3[2]	5
14	P	P	1[2]		2[2]	3[1]	2[1]	2[2]	1[2]	3[2]	2[2]
15	7	8		6	6	6	6	6	6	6	7
16	3[1]	4	4		5	6	4	4	5	6	6
17	2[2]	3[1]	3[2]		2[2]	3[1]	2[1]	2[2]	1[2]	1[2]	3[1]
18	5	11		6	6	7	6	8	6	6	8
19	4	6		5	5	6	5	6	6	6	6
20	5	11		5	5	6	3[2]	4	6	6	7
21	P	P	1[2]		PP	1[2]	PP	PP	PP	PP	PP
22	P	P	1[2]		PP	1[2]	PP	PP	PP	P	4
23	4	6		5	5	6	4	4	3[1]	3[2]	6
24	7	8		6	5	6	5	6	5	6	6
25	4	6		5	4	5	3[2]	4	5	6	6
26	7	8		6	6	8	6	8	5	6	6
27	3[1]	4	4		4	5	3[2]	4	3[1]	4	6
28	7	8		6	7	9	8	9	6	6	6
29	4	6		5	5	6	5	6	3[2]	4	5

Note 1. Decimal fractions obtained from readability measures were converted to grade equivalent scores. e.g. 3.1 = 31, = 3.5 = 32.

Note 2. The minimum score is that which, according to the tests, is an instructional level closest to the independent level of the pupil whereas the maximum score is that which is an instructional level closest to the frustration level of the pupil.

TABLE 6

COMPARISONS OF READING DIFFICULTY LEVELS AS DETERMINED BY FOUR MEASURES OF READABILITY ON SELECTED PASSAGES FROM SCOTT, FORESMAN READERS

			Readability Measures		
Reader Title	*Page*	*Publisher*	*Botel*	*Spache*	*Dale-Chall*
Fun With Our Friends	35-38	P	P	1.9	
	73-75	P	P	1.7	
	113-115	P	1^2	1.8	
More Fun With Our Friends	69-71	1^2	1	1.7	
	121-123	1^2	2^1	2.2	
	170-171	1^2	1	2.2	
Friends Old And New	58-59	2^1	2^1	2.0	
	113-114	2^1	2^1	2.0	
	174-175	2^1	2^1	2.3	
More Friends Old And New	70-71	2^2	3^1	2.9	
	135-136	2^2	3^1	2.7	
	202-203	2^2	3^1	3.3	
Roads To Follow	58	3^1	4	3.4	
	97	3^1	4	3.9	
	105-106	3^1	3^2	3.9	
More Roads To Follow	50	3^2	6		5.65
	128	3^2	5		4.76
	203	3^2	4		4.76
Ventures	112	4	4		4.91
	212	4	4		5.42
	312-313	4	4		5.39
Vistas	124	5	3^1		4.71
	220	5	8		5.54
	329	5	8		5.86
Cavalcades	141	6	8		7.36
	231	6	7		6.37
	340	6	8		6.02

TABLE 7

COMPARISONS OF READING DIFFICULTY LEVELS AS DETERMINED BY FOUR MEASURES OF READABILITY ON SELECTED PASSAGES FROM SCOTT, FORESMAN WORKBOOKS

			Readability Measures		
Workbook Title	*Page*	*Publisher*	*Botel*	*Spache*	*Dale-Chall*
Think And Do Book For	20	P	2[1]	1.8	
Use With Fun With	48	P	1[2]	1.9	
Our Friends	73	P	1[2]	1.8	
Think And Do Book For	15	1[2]	2[1]	1.8	
Use With More Fun With	32	1[2]	2[2]	2.1	
Our Friends	76	1[2]	2[2]	2.4	
Think And Do Book For	23	2[1]	2[2]	3.3	
Use With Friends Old	41	2[1]	2[1]	2.5	
And New	79	2[1]	3[2]	2.8	
Think And Do Book For	7	2[2]	5	3.3	
Use With More Friends	46	2[2]	3[1]	3.5	
Old And New	71	2[2]	2[2]	5.3	
Think And Do Book For	14	3[1]	4	4.8	
Use With Roads To	47	3[1]	4	4.7	
Follow	71	3[1]	6	4.7	
Think And Do Book For	7	3[2]	6		5.4
Use With More Roads	43	3[2]	4		4.5
To Follow	77	3[2]	8		6.0
Think And Do Book For	7	4	7		5.6
Use With Ventures	53	4	6		5.3
	97	4	6		5.7
Think And Do Book For	20	5	12		8.7
Use With Vistas	61	5	9		7.9
	96	5	11		6.2
Think And Do Book For	38	6	7		6.0
Use With Cavalcades	84	6	7		5.8
	99	6	4		5.3

TABLE 8

NUMBER AND PERCENT OF 29 FOURTH GRADE PUPILS CORRECTLY PLACED, UNDERPLACED, AND OVERPLACED BY SEVERAL READING TESTS MATCHED WITH THE PUBLISHER'S ESTIMATE OF READABILITY AND ANALYSIS OF THE DATA

		Placement							*Analysis*			
		Underplaced				*Overplaced*			*on*			*2 or*
Test		*−2*	*−1*	*0*	*+1*	*+2*	*+3*	*+4*	*level*	*+1 to −1*	*−1 to 0*	*more over*
Diagnostic Reading Scales	N		2	4	9	8	4	2				
Maximum	%		6	13	31	28	13	6	13	50	19	47
Standard Reading Inventory	N	3	6	13	4	2	1					
Minimum	%	10	20	45	13	6	3		45	78	65	9
	N	9	10	5	3	2						
Maximum	%	31	33	17	10	6			17	60	50	6
Botel Reading Inventory												
Word Recognition	N	9	2	12	5		1					
Minimum	%	31	6	41	17		3		41	64	47	3
	N	4	4	11	7	2	1					
Maximum	%	13	13	38	24	6	3		38	75	51	9
Word Opposites												
	N	1	3	12	11	2						
Minimum	%	3	10	41	38	6			41	89	51	6
	N		2	7	8	9	3					
Maximum	%		6	24	28	31	10		24	58	30	41
Total												
	N	4	4	11	9	1						
Minimum	%	13	13	38	31	3			38	82	51	3
	N		5	11	7	4	2					
Maximum	%		17	38	24	13	6		38	79	55	19

TABLE 9

NUMBER AND PERCENT OF 29 FOURTH GRADE PUPILS CORRECTLY PLACED, UNDERPLACED, AND OVERPLACED BY SEVERAL READING TESTS MATCHED WITH BOTEL'S PREDICTING READABILITY LEVELS ESTIMATES OF READABILITY

		Placement												*Analysis*		
		Underplaced								*Overplaced*			*on*			*2 or*
Test		*−7*	*−6*	*−5*	*−4*	*−3*	*−2*	*−1*	*0*	*+1*	*+2*	*+3*	*level*	*+1 to −1*	*−1 to 0*	*more over*
Diagnostic Reading Scales	N				1	3	5	4	8	3	5	2				
Maximum	%				3	3	17	13	13	10	17	6	13	36	26	23
Standard Reading Inventory	N			3	1	7	3	4	8	2	1					
Minimum	%			10	3	24	10	13	28	6	3		28	47	41	3
	N			2	1	3	7	4	8	1	2	1				
Maximum	%			6	3	10	24	13	28	3	6	3	28	44	41	9
Botel Reading Inventory																
Word Recognition	N	1	1	1	2	8	3	4	5	3	1					
Minimum	%	3	3	3	6	28	10	13	17	10	3		17	40	30	3
	N	1	1	0	2	6	4	5	6	2	2					
Maximum	%	3	3		6	20	13	17	20	6	6		20	43	37	6
Word Opposites	N				2		4	6	9	3						
Minimum	%				6	17	13	20	31	10			31	61	51	0
	N				1	1	5	4	12	4	2					
Maximum	%				3	3	17	13	41	13	6		41	67	54	6
Total																
	N		1	2	2	3	4	7	8	2						
Minimum	%		3	6	6	10	13	24	28	6			28	58	52	0
	N	1	0	0	2	1	6	3	13	3						
Maximum	%	3			6	3	20	10	45	10			45	65	55	0

TABLE 10

NUMBER AND PERCENT OF 29 FOURTH GRADE PUPILS CORRECTLY PLACED, UNDERPLACED, AND OVERPLACED BY SEVERAL READING TESTS MATCHED WITH THE SPACHE AND DALE-CHALL ESTIMATES OF READABILITY

		Placement							*Analysis*			
		Underplaced				*Overplaced*			*on*			*2 or*
Test		*−3*	*−2*	*−1*	*0*	*+1*	*+2*	*+3*	*level*	*+1 to −1*	*−1 to 0*	*more over*
Diagnostic Reading Scales	N			2	9	9	8	1				
Maximum	%			6	31	31	28	3	31	68	37	31
Standard Reading Inventory	N	1	6	9	9	3	1					
Minimum	%	3	20	31	31	10	3		31	72	61	3
	N		3	6	12	6	1	1				
Maximum	%		10	20	41	20	3	3	41	81	61	6
Botel Reading Inventory												
Word Recognition	N	1	6	14	5	3						
Minimum	%	3	20	48	17	10			17	75	65	0
	N		2	16	7	3	1					
Maximum	%		6	55	24	10	3		24	89	79	3
Word Opposites												
	N		2	7	18	1	1					
Minimum	%		6	24	62	3	3		62	89	86	3
	N			2	16	8	3					
Maximum	%			6	55	28	10		55	89	61	10
Total												
	N		5	9	13	1	1					
Minimum	%		17	31	45	3	3		45	79	76	3
	N		1	10	10	4	3	1				
Maximum	%		3	33	33	13	10	3	33	79	66	10

3. The Analysis section of each of these tables summarizes the extent of match as follows
   a. "On" means a perfect match between the reading test and criterion.
   b. "— 1 to + 1" means the reading test placed the pupil within one reader level of a perfect match.
   c. "— 1 & 0" means the reading test placed the pupil either right on level or no more than one level below this.
   d. "2 or more over" means that the reading test seriously overplaced pupils by at least two levels.

Findings in Tables 8, 9, and 10

From these tables it can be seen, at least for the pupils of this study, which tests or subtests and which score, minimum or maximum, results in the best match. Several of the findings are of interest:

1. Given the publisher's estimate of the criterion (Table 8), the Botel Reading Inventory Word Opposites minimum instructional level and the Standard Reading Inventory minimum instructional level represent the two best matches, whereas the Diagnostic Reading Scales is the poorest match.
2. Given the Botel Predicting Readability Levels estimate of the criterion (Table 9), the Botel Reading Inventory total test maximum and the Botel Reading Inventory Word Opposites Test maximum represent the two best matches, whereas the Diagnostic Reading Scales is the poorest match.
3. Given the Spache and Dale-Chall estimate of the criterion (Table 10), the Botel Reading Inventory Word Opposites Test maximum and the Standard Reading Inventory maximum scores represent the two best matches, whereas the Diagnostic Reading Scales is the poorest match.
4. The highest percentage of placement "on level" (55 percent) was between the Botel Reading Inventory Word Opposites maximum and the Spache and Dale-Chall estimate of the criterion.
5. The highest percentage of placement "+1 to —1" (92 per-

cent) was between the Botel Reading Inventory Word Opposites minimum and the Spache and Dale-Chall estimates of the criterion.

6. The highest percentage of placement "+1 and 0" (86 percent) was between the Botel Reading Inventory Word Opposites and the Spache and Dale-Chall estimate of the criterion.
7. The lowest percentage of overplacement "2 or more over" a perfect match was zero, which was achieved by matching the Botel Reading Inventory total (minimum and maximum) and the Botel Reading Inventory Word Opposites minimum with the Botel Predicting Readability Levels estimate of the criterion.

Summary

This study 1) proposes a research design for cross validation between reading tests and readability measures using correlational and matching procedures and 2) reports the result of a pilot study using this design.

The correlations among all the reading tests and readability measures were unusually high. The results of the matchings indicated the lack of any perfect combination of test and readability measure. However, certain tests and readability measures for the pilot group provided better matches than other combinations.

Conclusions and Implications

1. The proposed design is both feasible and provides data relating to one of the most fundamental purposes of a reading inventory—the proper placement of pupils in their books. By using several readability estimates of the criterion, the design further provides concurrent validity information for both reading tests and readability measures.
2. By using several tests and several readability estimates, it is possible to determine the relative power of commonly used measures. Charts such as 8, 9, and 10 can be used by teachers and examiners to determine the best match between tests and readability measures.

3. The best test is a function of several factors. Among these are
   a. The best match with a readability measure.
   b. The time and cost of administering the test.
4. Any test of instructional level, even when combined with a matching readability measure, provides only an estimate of a pupil's level. As Botel has noted, the administration of a placement test represents,

   > . . . only Step 1 of a three-step process in placing pupils at appropriate instructional levels:
   > Step 1: Administering and interpreting Reading Placement Tests
   > Step 2: Trying the book on for "fit"
   > Step 3: Continuous evaluation. (Botel, 1966)

5. Further research is indicated with emphasis on
   a. Selection of pupils by randomization from a larger school population.
   b. Selection of pupils from several grade levels.
   c. The use of other reading series.
   d. The use of other tests (informal and standardized) and readability measures.
   e. The use of different cut-off points for comprehension scores and of the use of different techniques to measure comprehension such as the CLOZE procedure.

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The Validity of Certain Measures in an I.R.I.

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THE PURPOSE of this analysis was to determine if data from two informal reading inventories and one standardized achievement test of reading would support the concepts of independent, instructional, and frustration levels of reading.

Administration of the Tests

The tests were administered during a two month period from late February to beginning April. The Standard Reading Inventory, Form A (*1*), was administered first followed by the Stanford Achievement Tests (*2*), the California Tests of Mental Maturity (*3*), and the Botel Reading Inventory (*4*). Fourteen qualified examiners administered the tests, six male and eight female.

Population

All the pupils enrolled in grades one through six at the Western Washington State Campus School, a total of 147 boys and girls, and a combined second and third grade class, 24 children, from a nearby public school were tested. The combined second-third grade class did not take the Botel Inventory.

Treatment of the Data and Results

A sign test for correlated differences was used to determine significance of differences for the subtest data from the SRI. A *t*-test was used to determine the significance of differences between the achievements at successive grade levels on the SRI, and the Botel Inventory. A correlation was run between the midpoints of the instructional range of the SRI and the Botel Inventory.

The following numerical values were assigned to the book

levels for correlation calculations and for reporting grade levels since both the SRI and the Botel Inventory yield instructional levels which are book levels:

preprimer	0.7
primer	1.2
first reader (1^2)	1.7
readiness second reader (2^1)	2.2
second reader (2^2)	2.7
readiness third reader (3^1)	3.2
third reader (3^2)	3.7
fourth reader	4.5
fifth reader	5.5
sixth reader	6.5
seventh reader or junior high	7.5
above seventh reader or senior high	8.5

The 0.01 level of confidence was set as the level for accepting or rejecting the null hypotheses that there were no significant differences between the scores being compared.

The scores used with the sign test were computed in a way that might have obscured significant differences. Individual scores were compared in each of the nine subtests of the SRI. The nine subtests are listed in table 3. Each child's scores were compared at succeeding book levels. For example, a child's raw scores at 2^1 and 2^2 levels, his scores at 2^2 and 3^1 levels, his scores at 3^1 and 3^2 levels, etc., were compared for each subtest. In the SRI there are 77 words in the 2^1 level story and 78 words in the 2^2 level. If a child made seven oral reading errors in reading at the 2^1 level and nine at 2^2 level, his performance at the 2^2 level was considered as worse and his performance substantiated the validity of informal testing. However, if he made one error only in reading each story, his performance at 2^2 level was considered as better than his performance at 2^1 level and was tallied as not substantiating the validity of the informal testing. An error ratio of 1 error/77 words probably should be rated as equal to an error ratio of 1 error/78 words. This method of comparison was used so that any error in rejecting or accepting the hypotheses would be conservative rather than optimistic, since the

prejudice of the principal investigator is in favor of rejecting the null hypotheses.

The results of the tests are in Table 1, the correlations between the SRI and the Botel Inventory are in Table 2, and the results of the sign test for the subtests of the Standard Reading Inventory are in Table 3. All of the correlations, all of the sign tests results, and the

TABLE 1

MEAN LEVELS OF ACHIEVEMENT BY CLASS ON THE STANDARD READING INVENTORY, THE BOTEL READING INVENTORY, THE CALIFORNIA TESTS OF MENTAL MATURITY, AND THE STANFORD ACHIEVEMENT TESTS FOR 170 PUPILS IN GRADES 1-6

		Instructional Levels							
		SRI		*Botel Inventorye*		CTMM		SAT	
Grade	N	*Min-imum*	*Max-imum*	*Min-imum*	*Max-imum*	IQ	MA	PM	WM
1	25	0.84	1.00	1.04	1.26	125.64	89.32	2.71	1.62
2	37	2.19	3.00	2.43	2.71	124.76	100.62	3.28	3.24
3	36[a]	2.53	3.70	3.50	3.83	122.47	109.97	4.07	4.13
4	25	3.86	5.66	5.26	5.47	116.08	114.44	6.08	6.28
5	23[b]	4.67	6.48	5.40	5.82	112.91	125.61	6.70	6.80
6	24	4.86	6.95	5.95	6.63	110.63	133.08	7.16	7.14

[a] N for SRI = 35.
[b] N for SAT = 22.
[c] N for Botel = (Grade 1) 23; (Grade 2) 23; (Grade 3) 22.

TABLE 2

CORRELATIONS BETWEEN THE MID-RANGE OF INSTRUCTIONAL OF THE STANDARD READING INVENTORY AND THE BOTEL READING INVENTORY FOR 140 CHILDREN IN GRADES 1-6

Grade	N	*r*	*Significance of correlation*
1	23	.79	<0.01
2	23	.88	<0.01
3	22	.85	<0.01
4	25	.95	<0.01
5	23	.90	<0.01
6	24	.78	<0.01
Total	140	.95	<0.01

TABLE 3

SIGN TEST RESULTS OF INDIVIDUAL SCORES ACHIEVED ON THE NINE SUBTESTS OF THE STANDARD READING INVENTORY BY 147 PUPILS IN GRADES 1-6

Test	*Higher Level Score Better Than Lower Level Score*							*Lower Level Score Better Than Higher*							P
(Grade)	1	2	3	4	5	6	Total	1	2	3	4	5	6	Total	
Vocabulary in Context	1	3	6	5	4	2	21	34	33	22	12	10	2	114	<.00003
Vocabulary in Isolation	0	9	12	9	11	3	44	41	87	85	75	63	45	396	<.00003
Word Recognition Errors	7	33	37	42	35	28	182	35	63	64	71	48	30	311	<.00003
Total Errors	5	44	42	52	31	29	203	37	61	75	73	51	37	334	<.00003
Comprehension Oral Recall	7	33	41	32	32	29	174	15	46	55	60	43	32	251	<.00016
Comprehension Silent Recall	2	15	21	26	25	24	113	6	22	36	40	30	22	156	<.0052
Total Interpretation	1	11	14	22	25	15	88	4	40	39	47	34	29	193	<.00003
Speed Oral	5	24	34	32	15	17	127	35	80	79	74	80	58	406	<.00003
Speed Silent	1	12	14	35	35	23	120	9	40	55	60	40	45	249	<.0007

mean achievement comparisons between succeeding grade levels for the pupils taking the SRI and the Botel Inventory are significant well beyond the 0.01 level.

Discussion and Interpretation of the Results

The significant differences in mean achievement for succeeding grade levels on the SRI and the Botel Inventory are what would be expected when measuring an area of developmental growth. These differences and the increasingly higher mean scores achieved by each grade level confirm the validity of both tests and the validity of informal testings.

One way to demonstrate the validity of a test is to compare it to another test which purports to measure the same skill or skills. If one of the measures has been validated previously by an independent means, the similarity of difference in the two measurements can be interpreted to support or not to support the validity of the newer or non-validated instrument. This is usually called concurrent validity. The Stanford Achievement Tests generally are accepted as valid group tests. A comparison of the mean levels of achievement of the Stanford Achievement Tests and the instructional levels of the SRI and the Botel Inventory gives strong evidence of concurrent validity.

The Botel Inventory and the Standard Reading Inventory both offer some evidence of validity in their manuals, and the validity of the SRI was reported at the 1964 IRA conference in Philadelphia. Since both purport to measure the basal book levels at which a child should be instructed, they should yield similar results, particularly if they use the same standards for determining instructional level. The SRI and the Botel Inventory are alike in that they are outgrowths of the work of Betts and others, as reported by Dr. Beldin in his "Informal Reading Testing: Historical Review and Review of the Research." Both McCracken and Botel have adapted Betts' standards and use somewhat different ways of measuring the instructional levels. All the correlations between the SRI and the Botel Inventory are significant ($p < 0.01$), and, considering the size of the groups, give strong evidence that these two measures, developed independently to measure the same skill, do indeed measure

the same skill or skills. The correlations support the concept that instructional level can be measured and can be measured reliably.

The data from the SRI as reflected in the sign test analysis supports the concept of developmental growth in each of the nine subtests areas. The subtests may not be independent measures since the subtests are probably highly correlated. This is not meant to imply that reading is composed of nine or more separate skills. It is meant to imply that reading achievement may be measured informally in nine or more ways. Since the Botel Inventory uses basically only one or two measures to determine instructional level, and since the nine subtests of the SRI all yield significant differences between succeeding levels of difficulty, it is felt that a brief test using the most critical of these measures might be used if one wishes only to determine the instructional level of a child. We interpret the results of the sign test as indicating that pronouncing words presented in isolation is the most sensitive single subtest of the SRI for determining the instructional level, and speed of oral reading as the second most sensitive test. No standards have been developed for using either subtest singly to determine instructional level. The high correlations between the Botel Inventory and the SRI may be partially explained by the sensitivity of the vocabulary measure since the Botel Inventory uses this as one of its two primary measures.

None of the data in this study affirms the validity of the concept of instructional level, or the standards for determining the instructional levels. The data do affirm that something labeled instructional level can be measured validly; they do not affirm or deny that pupils instructed at their measured instructional levels will learn to read or that they will learn to read better, or worse, or more easily than if they were taught at levels other than their instructional levels.

One additional analysis is being made. The analysis could not be completed in time for inclusion in this paper; however, it is complete enough to mention. The oral reading errors made by the children in reading from the SRI were classified in seven error types: repetitions, unknown words pronounced by the examiner, mispronounced words, omissions, additions, substitutions, and misread punctuation. The types of errors made at successive levels are being

compared with attention to shifts in error patterns. A shift in error pattern was observed between the maximum instructional level and the first level of frustration. This is significant ($p < 0.01$) as tested by the chi-square technique. No significant shift in error pattern seems to exist between successive levels if the levels are both in frustration or both in instructional. No difference appears to emerge in comparing oral reading errors at the independent level and the minimum instructional level; however, so few errors are made at the independent level that the difference may be obscured by the lack of power of the statistic used. If this pattern continues, it would seem to offer evidence that the standards used in the SRI are good standards and that the concepts of instructional level and frustration are valid. It further implies that instructional level errors should be used in determining instructional needs and that using errors made at frustration level to determine instructional needs may lead to incorrect instructional programs. For example, we note reversal problems in some good readers at frustration level, but none at instructional level.

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Using an Informal Reading Inventory to Place Children in Instructional Materials

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A TEACHER must know a pupil's reading level in order to assign materials which challenge the reader without discouraging him. In adjusting to individual differences in reading, the importance of selecting suitable materials for every reading situation cannot be overemphasized (*4*). If a pupil receives instruction from materials which are too easy for him, he is not motivated to attain maximum growth. In contrast, if a pupil receives instruction from books which are too difficult, he may become frustrated and discouraged when he is unable to meet the standards of achievement established for him.

Substantial confirmation that reading authorities regard the selection of inappropriate materials as a major contributing cause of reading difficulties is evidenced throughout the literature (*8, 10*). Conversely, greater gains in achievement are made by pupils when reading materials are adjusted to their levels of instruction. This principle has been validated by the research of Cooper and others (*5, 9*). The problem is one of translating theory and research into effective classroom practice. Unfortunately, many teachers continue to be frustrated by the wide range of pupil reading achievement found within their classrooms whether they teach in affluent suburban or in depressed ghetto schools. Regardless of the methodology used in teaching reading, the teacher must, if he is effective, have accurate and current information about each pupil's level of reading achievement.

Observations and a brief survey of current practices led to the conclusion that most teachers follow two general procedures in selecting instructional reading materials for pupils in their classrooms. On one hand, teachers commonly attempt to determine a pupil's instructional reading level by referring to group administered stan-

dardized test scores, either reading tests or achievement tests. Or, they listen to a pupil read orally from a book. Often, this procedure represents a rather crude and unsystematic utilization of the informal reading inventory technique. Both of these procedures are fraught with difficulties.

The weight of available research evidence seems to support the conclusion that standardized test scores tend to overestimate a pupil's instructional reading level (*13*). Furthermore, standardized test results may not always be current, and the results may be difficult for the teacher to interpret in terms of pupils' instructional reading levels (*15*).

Reading authorities (*1, 7*) agree that the informal reading inventory represents one of the most powerful instruments readily available to the classroom teacher for assessing a pupil's instructional reading level. In the hands of a skillful and perceptive examiner, the informal reading inventory may be used to identify accurately the major aspects of a pupil's functional reading behavior.

An informal reading inventory is perhaps best described as an individualized measurement of reading performance, based on standard criteria, where the subject reads silently and orally selected passages from a graded series of reading materials in order to determine his functional reading levels. Group informal inventories may also be administered, and they follow a procedure similar to the individualized inventory.

Thus, the use of standardized test scores as a basis for estimating pupils' instructional reading levels appears to be less desirable than the use of the informal reading inventory for this purpose. However, even though the informal reading inventory represents a most effective instrument for evaluating a reader's performance, perhaps its greatest disadvantage relates to the competency of the examiner since the accuracy of the data secured through its use depends almost entirely upon the competence of the examiner. For example, Millsap's study (*12*) reveals that experienced classroom teachers were not cognizant of the frustration reading levels among their pupils in basal readers when they were asked to utilize informal reading inventory techniques to make this determination.

Although it is easy to state that teachers should determine accurately each pupil's functional reading levels in order to provide appropriate reading materials, the actual performance of this task leaves much to be desired.

The Berea, Ohio, Inservice Education Experiment

The Berea, Ohio, Inservice Education Experiment was undertaken to obtain objective data to determine the effects of a specifically designed inservice program, which utilized simulation-type techniques, on teacher awareness of the instructional reading levels of pupils in the classroom. This inservice activity was designed to provide classroom teachers with a knowledge of, and the ability to administer, an informal reading inventory in order that they may select more accurately reading materials appropriate for their pupils' instructional reading levels in their classrooms. The informal reading inventory was selected as the basic inservice procedure because it provides, when properly administered, a realistic example of the pupil's current reading performance, and thus seemed a most promising way of improving classroom practice.

An expanded model of the *Informal Reading Inventory Instructional Process* developed by Beldin, Utsey, and Wallen (2) was selected as the vehicle to provide the inservice experience. For the past three years, these authors have been developing and testing simulation-type materials for training preparatory and inservice teachers to assess pupils' specific reading requirements and to identify the types of instructional arrangements most appropriate for meeting each need. These simulation materials were designed to prepare teachers for one of the most crucial tasks they will face in the teaching of reading—the selection of reading materials at appropriate instructional levels for each child.

These simulation materials include 16mm sound films, audiotapes, overhead transparencies, and instructional booklets. The *Informal Reading Inventory Instructional Process* has been designed so there will be a maximum transfer of learning to the classroom setting. The materials used in the process involve the participants actively in the types of problems which they face in the day by day operation of their classrooms. For example, the films used in the

simulation training actually involve the viewer (the teacher) as he must administer an informal reading inventory to a boy who had been recently assigned to the simulated classroom setting. This procedure assures practice of a learning task in a situation very similar to the one in which it will later be performed in the classroom.

In this experiment, teacher awareness was defined as the teachers' accurate perception of the instructional reading levels of pupils in the classroom. This awareness was determined by measuring the instructional reading levels of a randomly selected pupil from the classroom of each of the ninety-six teachers in the experiment on McCracken's Standard Reading Inventory (*11*) and the readability level of the instructional reading material to which the pupil had been assigned for reading instruction. The readability level was determined by the application of the *Spache Readability Formula* (*14*) for primary level readers and the *Dale-Chall Formula for Predicting Readability* (*6*) for reading materials above primary level. These two formulas were also used as a part of the standardization procedure for the Standard Reading Inventory. A close relationship between the two variables indicates a high degree of teacher awareness since the size of this difference is inversely related to teacher awareness of pupils' instructional reading levels.

As a further determination of teacher awareness, pupils in the sample were asked to read a selection of approximately 100 words near the "story" they had been reading in class. Betts' criteria (*3*) were applied to determine if the book could be classified at the pupils' instructional reading level.

Thus, the fundamental purposes of this experiment were: 1) to determine the relative effectiveness of an adapted model of the *Informal Reading Inventory Instructional Process* as a means of helping teachers become more cognizant of the instructional reading levels of pupils in the classroom; and, 2) to determine if the time of the school year when the teacher participates in this inservice activity makes a significant difference on teachers' awareness of the instructional reading levels of pupils in the classroom.

An auxiliary purpose of the experiment related to whether or not primary level teachers are more sensitive to the reading needs of pupils than upper grade teachers.

First, it was hypothesized that pupils of teachers who participated in an adapted model of the *Informal Reading Inventory Instructional Process* inservice activity were assigned reading materials more appropriate for their instructional reading levels than pupils of teachers who did not participate. Second, it was hypothesized that the time of the school year when the inservice program is scheduled does make a difference in its effectiveness. Finally, it was hypothesized that those who teach grades two and three are more aware of pupils' instructional reading levels than those who teach grades four and five.

A three-group post-test-only control group research design was used in the experiment. Ninety-six classroom teachers were selected from 191 teachers from grades two through five of a large middle-class suburban school system by a stratified random process. The selected teachers were then assigned to three samples by a stratified random process. Each sample consisted of eight teachers from each of the four grade levels—making a total of 32 teachers in each sample.

The inservice activity, an adapted model of the *Informal Reading Inventory Instructional Process,* represented the independent variable in the experiment; and teachers' awareness of the instructional reading levels of pupils in the classrooms represented the criterion variable.

One experimental sample of teachers participated in the inservice activity during five sessions of two hours each over a two week period, before the school year began and before the teacher had organized within-class reading groups. Another experimental sample of teachers participated in a similar type of inservice experience at the end of the first six weeks of the first semester, after the teachers had organized their classrooms and assigned basal reading materials to pupils. And, the third sample was designated as the control group. Teachers from this group did not participate in the inservice activity, nor were they aware they were participating in the experiment.

The data from the pupils' performance on the Standard Reading Inventory and the readability levels of their basal readers were transformed into normalized standard scores for the purpose of sta-

tistical comparison. "Reading inventory–readability difference" scores were computed for each pupil in the experiment. The size of this difference is inversely related to teacher awareness of pupils' instructional reading levels.

Analyses of these "reading inventory–readability difference" scores were made through the application of a three by four mixed model (fixed and random) analysis of variance. Further analyses were computed through the application of the appropriate techniques for multiple comparisons among means.

Findings, Implications, Prescriptions

The findings in this experiment indicate that the adapted model of the *Informal Reading Inventory Instructional Process* appears to provide an inservice education vehicle that may assist teachers in becoming more aware of the instructional reading levels of pupils in their classrooms in order to assign them materials appropriate for their instructional levels *if* the inservice experience is scheduled before they make instructional decisions regarding pupils' reading materials.

At least, in this experiment, when pupils' basal reading materials were evaluated for appropriateness in terms of their instructional reading levels, it was found

1. Teachers who participated in a simulation-type inservice program early in the school year immediately before they needed the skills developed in the inservice program, were significantly more aware of the instructional reading levels of pupils in the classrooms than those teachers who participated in the simulation-type inservice experience later in the school year after they had assigned pupils' basal readers.
2. There was no significant difference in teachers' awareness of pupils' instructional reading levels in the classrooms between teachers who participated in the simulation-type inservice program later in the school year and teachers who did not participate in a simulation-type inservice program.
3. Teachers who participated in a simulation-type inservice program early in the school year before they had assigned

pupils' basal readers were significantly more aware of the instructional reading levels of the pupils in the classroom than those teachers who did not participate in a simulation-type inservice experience.

Although not statistically significant, other comparisons among samples favored teachers who had participated in the simulation-type inservice program before they had assigned their pupils' basal readers. All of these teachers, who had participated before they needed the skills, grouped their pupils for reading instruction within the classroom. Also, they organized an average of 3.22 reading groups to accommodate individual pupil reading differences, and they utilized an average of 2.56 different criteria for placing pupils into reading groups.

Pupils of these teachers reported a significantly greater interest in telling stories, and nearly half of these pupils listed reading as their "most favorite" school subject.

The time that a simulation-type inservice program is scheduled appears to be a fundamental consideration which is related to classroom application for experienced teachers on the job. A simulation-type inservice program was not as valuable when scheduled during the year as teachers do not appear to change practices.

It was also found that primary grade teachers were significantly more aware of pupils' instructional reading levels in a simulation test experience than intermediate grade teachers. However, there was a contravertible difference between primary grade teachers' awareness of pupils' instructional reading levels in the classrooms and intermediate grade teachers.

Therefore, the general conclusions reported in this experiment may provide plausible suggestions for designing inservice education programs which relate to the specific needs of the classroom teacher and which can improve instruction in the classroom.

Teachers who participated in the simulation-type inservice program were enthusiastic. They indicated they were impressed with the realistic portrayal of the classroom environment in the simulation experience and with the idea that these simulation experiences would assist them in the day by day operation of their

classrooms. Although these judgments are subjective, they convey the impression of great interest in the activity.

Finally, over 95 percent of the teachers who participated in the inservice experience before school began reported they used informal reading inventory criteria as one criterion for placing their pupils into reading groups and assigning them instructional reading materials.

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Problems in Identifying Reading Levels with Informal Reading Inventories

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THE PURPOSE of this paper is to present several arguments which attack the concepts of independent, instruction, and frustration levels of reading. Special attention is directed at challenging informal methods of identifying levels of reading performance. An attempt is made to clarify understandings of the ways in which children's reading performance can be identified, and how reading evaluation data can be interpreted. Pitfalls of interpretation of informally gathered evidence of reading performance pointed out by Kender (*4*), Millsap (*6*), and Sipay (*7*) are examples of sources which support the following challenges.

Background

Identification of instruction, frustration, and independent reading levels by methods of informal analysis has been advocated as a desirable practice for several years. In general, textbooks used in preservice preparation of teachers suggest the use of informal reading inventories. Teachers of preservice courses in reading reveal their belief in these concepts to the extent that they have students construct reading inventories. Despite the value placed on the concept of informal analysis, the practice of using informal reading inventories by classroom teachers is not widespread.

A possible explanation for the lack of attention to informal analysis may be found in the evidence reported by Emans (*2*). He rated twenty teachers enrolled in a graduate course in remedial reading and diagnosis on their ability to distinguish reading skills needed by pupils they had tutored for one hour a day for five weeks. It was his conclusion that teachers were not viewing individual needs but were working with predetermined biases. That is, teach-

ers tended to have answers before asking questions. In this evidence there also appeared to be an indication that the broader concept of reading held by the teachers was not sufficiently developed to be able to include the actual ways children perform, or permit variations in interpretation of individual performance. Ladd (*5*) also found teachers to be inadequate at evaluating reading performance by informal methods unless given intensive training. She was able to improve teacher competency in evaluation of reading with a thirty hour training program.

Discussion

The first argument attacking the concepts of independent, instructional, and frustration reading levels involves the criteria used in identifying each level and the reliability with which individual performance can be judged.

The criteria used are important to establishing teacher accuracy in identifying pupil performance. The standards for each performance level vary considerably. Betts (*1*) suggests 95 percent word accuracy and 70 percent comprehension to establish an instructional level. Spache (*8*) believes these and other standards are arbitrarily high. In fact, Spache only uses oral reading performance as the source for determining independent level and silent reading to determine instructional level. The criteria for satisfactory comprehension is about 60 percent, and the word error standards drop to as low as 75 percent in order to be rated unsatisfactory.

Standards for acceptable performance at independent, instructional, and frustration reading levels appear to have been handed down from generation to generation, study to study, and text to text; and there appears to be ample evidence pointing out the fallacies of their use. Also, we lack substantial evidence to support using the criteria which we tend to believe.

Regardless of what standards are used, the evaluation of reading performance by informal procedures requires one to note errors in oral reading, judge correctness of answers, and decide on overall adequacy of performance. Adequacy of reading must be based upon the concept of reading held by the person doing the evaluation. Ladd (*5*) and Emans (*3*) give support for the arguments that teach-

ers are unreliable in identifying degrees of reading performance and that they may not have a well developed concept of reading.

Emans provided evidence that teachers were not able to evaluate the individual needs of pupils, but instead, tended to form judgments based on skills they thought children needed. This evidence suggests an inadequately developed concept of pupil performance in reading on the part of the teachers he evaluated. It would seem one should have a well developed concept of reading before one can adequately measure and interpret reading performance. Ladd found teachers to be inaccurate in identifying oral reading errors. Although the teachers in her study improved with training, they still missed 33 to 37 percent of the errors after 30 hours of training. With this amount of error factor for trained examiners, it would seem to follow that informal scoring by an inexperienced person would be even more unreliable.

Millsap (*6*) also found that classroom teachers could not identify reading performance as accurately as remedial teachers, with classroom teachers correctly identifying inadequate reading performance only 70 percent of the time.

A recent article by Kender (*4*) presented a review of the practice of reading evaluation by informal methods. He concluded that informal inventories could be of instructional value, but only when used by one thoroughly skilled in administration of inventories and thoroughly informed about the reading process. It seemed unlikely to him that classroom teachers could adequately use informal inventory procedures.

Another attack on the construct of varying performances in reading being called independent, instructional, or frustration can be made on the use of oral reading to determine suitability of material. For example, the typical procedures of testing call for oral reading at sight—a stressing situation for even the most proficient reader. The testing process is contrary to the general teaching process in oral reading in that teachers are admonished in preservice training, in textbooks, and in teacher guidebooks to never have a pupil read orally at sight. It is believed that a pupil reads better orally after having read silently first. Yet, informal testing pro-

cedures measure a pupil's oral reading at sight as a means of identifying levels of performance. This evidence is then used to differentiate between levels by a few percentage points to call one performance good, the other poor.

Oral reading testing appears to be an unreliable way of measuring reading because of the difficulties of judging word errors and noting phrasing, inflectional changes, and symptoms of difficulty. Added to this potential unreliability is the invalidity of the typical oral testing process, a technique which conflicts with curricular practice.

It is also possible to point out the fallacy of accepting oral reading at sight as adequate evidence of performance by permitting successive oral rereadings of a single passage. Table 1 shows the errors on four rereadings for an eleven year old boy.

TABLE 1

ORAL READING ERRORS ON SUCCESSIVE READINGS OF A 149 WORD PASSAGE

Error	*Readings*				
	1	*2*	*3*	*4*	*5*
Repetitions	6	3	4	1	2
Substitutions	11	6	6	4	3
Omissions	1	1	1	1	2
Additions	0	0	0	0	0
Aided Words	4	1	0	0	0
Total Errors	22	11	11	6	7
Self-Corrections	1	1	1	0	3
Rate (wpm)	60	89	87	99	99

On the first reading, the one generally used to determine proficiency, the boy made 22 errors while reading at 60 words per minute. The second reading had only half as many errors as the first, and the rate of reading was nearly half again as fast as the first reading. The third reading was nearly identical to the second. The fourth reading showed a decrease in errors from eleven to six and an increase in rate to ninety-nine words per minute. It is obvious

that oral reading performance, in terms of errors and rate, is improved by rereading. The reader's voice, inflectional variations, and attention to phrasing, were also improved with rereading.

There certainly is a question about which of these readings is the one which should be used to decide upon adequacy of performance. Depending on the criteria used, one could rate this pupil's performance independent, instructional, frustration, or all three. Regardless, the information in Table 1 demonstrates that oral reading at sight yields poorest performance when there has not been preparation for reading.

The interest or lack of interest of the subject in the content of the materials of testing is a strong influence on reading performance. For example, pupils generally read and comprehend passage 7B better than 7A in the Diagnostic Reading Scales. Passage 7A compares reading to driving a car while passage 7B is about formation of granite and marble. These two selections are about equal in difficulty according to readability estimates, but differ greatly in terms of content and potential interest.

Reading performance also varies considerably for an individual depending on his desire to read, with the desire to read at least partly due to interest value in the material being read. Motivation and interest in reading are generally accepted as being important determinants of success in reading. These factors certainly are potent enough to cause variations in reading performance greater than the differences generally used to determine independent, instructional, and frustration reading levels.

Summary

Weaknesses in informal testing procedures in reading appear to be strong enough to invalidate the concepts of independent, instructional, and frustration levels. This seems especially evident because of the general inability of classroom teachers to organize, conduct, and utilize informal diagnostic procedures.

It would appear that standardized individual or group tests of reading performance have more potential value than informal measuring instruments because they offer greater reliability and validity than informal measures. Interpretations with degrees of variation

in performance as fine as those suggested by the criteria for so-called independent, instructional, and frustration reading levels do not seem feasible or practical because the standard error of measure for highly reliable instruments would not permit such differentiations.

A reasonable suggestion for initial grouping and assignment of materials to pupils would be to use the suggestion of Daniels (*3*), which indicated accurate identification of appropriate group placement using the Gates test results with a constant of 2.0 subtracted from the pupil's score. This procedure is most appropriate when the teacher is not capable of administering or interpreting diagnostic tests.

Regardless of whether standardized or nonstandardized tests are used to measure reading performance, there appears to be sufficient doubt about making fine discriminations between reading performances which indicate that teaching at one level will cause failure and teaching at a slightly different level will permit success to challenge the concepts of independent, instructional, and frustration reading levels.

There is also evidence that the criteria used to identify the three different reading levels may be inappropriate, and as such, they tend to invalidate the concepts of three distinctly different reading levels being identifiable by these criteria.

A suggestion is made that more attention be given to identifying reading performance by ways which do not depend upon examiner judgment, make more use of interests of the reader, pay less attention to finely differentiated levels of performance, and place less importance on measurement of oral reading.

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Directions for Informal Reading New Assessment *

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IT IS OUR JUDGMENT that construction, administration, and interpretation of informal reading inventories are far too time-consuming for the regular classroom teacher. She either will not learn the skills or, having learned them, will not use them in practice because of competing demands upon her time. The teacher will find other classroom activities more relevant to instruction and drop the time-consuming informal reading inventory, which is less relevant to improving pupil reading performance.

It is our prediction that many of the procedures of current informal reading inventories will be built into instructional materials. Informal reading inventories will then either be revised to compete with diagnostic reading batteries or adapted to accompany specific basal readers. Meanwhile, the teacher should work on development of other skills in informal reading diagnosis. The skills to be developed should conform with one of the new roles of the teacher—high level troubleshooter within a reading program that has built into it much formal diagnosis and individually prescribed instruction.

Following is a brief, specific illustration of the kind of informal reading diagnosis and prescription skill necessary in the teacher's new role as high level troubleshooter.

1. The teacher is using McGraw-Hill *Programmed Reading*. Kristen is in Book 8, having passed the end of book tests in previous books at a performance level of 85 percent or better.

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* Much of the work represented in this paper was done at the Exemplary Center for Reading Instruction, Granite School District, Salt Lake City, Utah. Dr. Ethna Reid is director of the Center.

2. The teacher listens to Kristen read a red-lined, in-book test in Book 8. The reading is word-by-word. The teacher then has Kristen read from Book 6.
3. Kristen reads as follows:
   Annnn/ and/ Sam/ wwwwent/ up/ the hill/ and/ sat/ in the/ grass.
   A bird/ sat/ on/ Sam's/ finnnnnger.
4. The teacher says to herself, "Word-by-word reading of review material at this point in the reading program is a reading deficiency. The child should be able to read material at this level with greater fluency. The problem is probably lack of phrase reading ability."
5. The teacher then thinks, "Now, how can I check my hunch?" In response to her question, the teacher gives the child a flash card survey of words in the problematic sentence, such as *went, grass, hill, bird, finger,* etc., to find out if the difficulty is one of word recognition rate or phrase reading fluency.
6. Kristen reads all the words with a rate of two seconds or less on each word. The teacher then prescribes some oral reading for the child in unison with a tape recording of material at the Book 6 level. The teacher also gives Kristen practice in discriminating between word-by-word and fluent reading.
7. The prescription worked rather well, but there is still a problem. Kristen now reads fluently but only on material where she has practiced with the tape, and then that is lost by the next class session. The teacher ponders that outcome and decides that she should gradually provide unprompted practice.
8. The teacher first intersperses a small amount of unprompted practice, then larger and larger amounts. One technique is to have Kristen turn down the volume on the tape for every underlined sentence. This turns out to be one sentence out of ten at first, moving down to two out of ten, three out of ten, etc., down to no prompted reading. It works. Kristen now reads phrases fluently when she is reading material on which her word recognition is accurate and rapid.

It is our conviction that on-the-spot diagnosis, checking of diagnosis, prescription, prescriptive teaching, and revision of prescriptions until the reading deficiency is corrected, is an essential role of the teacher in what is truly informal reading diagnosis. The teacher must develop these skills for handling a variety of reading deficiencies including substitutions; reversals; omissions, additions, or misreadings of endings; picture reading; difficulty in blending; etc. The "informal reading inventories" usually proposed for teachers are too time-consuming for use and should be built into the reading program by authors of materials for reading instruction. More relevant tasks for on-the-spot troubleshooting by the teacher have been suggested above. A sample exercise in simulation of that task is presented below.

You will now be taken through one diagnosis and prescription cycle that simulates the role of the teacher we have just illustrated. Complete each step of this cycle precisely as directed before proceeding to the next step.

1. On three separate occasions a child looks at the word *blank*, then sounds out the letters and reads as follows:

   /b/ /l/ /a/ /nk/, black

What is the child's reading problem? (Determine your answer before proceeding to the next step.)

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2. Match your description of the child's reading problem against the following alternatives. Then go to the next step indicated. The child reads */b/ /l/ /a/ /nk/, black* because
   a. He is a careless reader, or doesn't look carefully, or doesn't think. (Go to 3a.)
   b. He knows the phonemic sounds, but for some reason does not blend them properly. Probably because "black" has a higher frequency rate than "blank" in the child's vocabulary. (Go to 3b.)
   c. Child doesn't know the sound of "n." (Go to 3c.)
   d. It is a configuration substitution. (Go to 3d.)

3a. You said the child was "a careless reader . . . ." This is a rather vague statement which does not provide enough information which can be used in prescribing diagnostic procedures or treatment. (Go back to 2b.)

3b. Very good! The child does know the sounds corresponding to the letters. He simply did not blend them for the probable reason given. Now how would you check that diagnosis? (Determine your procedure for validating the diagnosis and then go to 4.)

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3c. The child did give the correct sound for each individual grapheme, but he didn't blend them correctly. So his problem was *not* inability to sound *n*. (Go back to 2b.)

3d. The words do look alike. But the child correctly sounded each element in *blank* and thus was *perceiving* each element and not likely using a configuration approach. The problem occurs in the next step of blending. (Go back to 2b.)

4. You suggested a procedure or procedures for checking the validity of your diagnosis. Match your suggestion against the three alternatives given here and follow the directions given.

   a. Have the child read the following paired words:

back	*sack*	*sick*	*thick*	*pink*	*clack*
bank	*sank*	*sink*	*think*	*pick*	*clank*

   b. Check to see if the error type occurs in context. Have the child read the following two sentences.
   Fill in the *blank*. The cat is *black*.

   c. Is the higher frequency rate for the word *black* built into the reading program? Check to see.

(Regardless of your choice(s) above, move to 5a.)

5a. Procedure 4a was used as a diagnostic check and the child read at sight each pair of words correctly (*back, bank,* etc.) except for *clack-clank* which he read as follows:

clack: */c/ /l/ /a/ /ck/, clack;* clank: */c/ /l/ /a/ /nk/, clank*

5b. Procedure 4b was used as a diagnostic check and the child read correctly the words *blank* and *black* when in a sentence context.

5c. The word *black* does have a higher frequency rate than *blank* in the program. For example, it occurs as a completion or context item ten times more than *blank* in series 1 and 2. Also, *black* is found in workbooks 3 through 9 but *blank* occurs only in workbooks 3 and 4.

How would you prescribe treatment for the difficulties as you now diagnose them?

(Go to 6.)

6. You proposed a prescription for instruction based on the diagnosis. Check your prescription against the alternatives given below and follow directions.

   a. Teach the child blending in words which begin with *cl* and *bl* and end in *nk* and *ck*. For example, have him hold one sound and run it into another without pausing. Then reduce the duration of the sound until the word is being produced accurately.

   /blll/ /aaaa/ /nnnnk/
   /blll/ /aaa/ /nnk/
   /bll/ /aa/ /nnk/
   blank

   Do not have large pauses between sounds, such as

   /bl/ —— /a/ —— /nk/

   b. Since context helps the child, and there were not enough sentences using *blank*, provide additional context exercises using the problem words so he will arrive at the correct pronunciation as in 4b.

   c. Teach the child the sounds that *ck* and *nk* stand for so he can identify them in a list of other sounds.

(Go to 7 regardless of your choice.)

7. You selected a prescription for instruction in the previous item. The results of following that prescription in teaching the child are presented below. Check the results for the prescription you proposed.

a. Following instructions, the child was able to blend *black/blank* and similar word pairs beginning with consonant combinations in word lists when presented with or without other words in any order. Go on to the next simulation problem.
b. The child does not need further prompts. He already produces the word correctly when prompted in context. The practice you suggested did not make a difference in the child's reading of the words in a word list. (Go to 6a.)
c. Practicing the sounds that *ck* and *nk* stand for did not influence the child's ability to blend words like *blank* and *clank*. (Go to 6a.)

Problems of Reading in an Urban Society

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DURING the past several decades the United States has become an Urban Society. Once proud cities, populated by a relatively small, upward mobile society, have become crowded by the rural poor of our nation. Small slum areas, once inhabited by newly arrived immigrants from various European countries have been replaced by huge ghettos, filled by poverty stricken Blacks from the deep South, Spanish-speaking farmers and villagers from Puerto Rico, and dislocated poor whites from such areas as Appalachia.

The three major groups which have occupied the decaying center city have one characteristic in common. They are poor. Out of their poverty have come such related problems as crime, disease, transiency, and illiteracy. It is with the issue of illiteracy and its effect on the schools of every city that we must deal.

In every major city in the United States—New York, Chicago, Detroit, Cleveland, Pittsburgh, Los Angeles, Washington, D.C.—the alarm has been sounded about the condition of the ghetto schools. The problem of reading has been mentioned over and over again as a major issue of these schools for the poverty stricken of the ghetto.

As a member of a team evaluating the reading program in two well-known poverty areas of New York City, I have become intimately acquainted with ghetto schools. Ghetto schools range over every dimension of quality. One of the ghetto schools I visited had an all white pupil population, a stable, if discouraged, reading staff, and few, if any, discipline problems. The school was old but clean, the neighborhood decaying—but in a slow manner. Approaches to the school were safe—streets were clean and one had to look carefully to observe the poverty of the neighborhood. The school population suffered from an inability to cope successfully in the junior high school after leaving the elementary school. This school pro-

vided the bulk of dropouts in the centralized high school, which drew from a variety of elementary schools.

Recently, I spent an afternoon with a group of professional and paraprofessional teachers in a ghetto school in Rochester, N.Y. This elementary school has a good outward appearance, a reasonable sized population, and until recently a stable teaching staff. Shortly before my visit, representatives of a community power group forced the closing of the school and kept it closed until school officials agreed to certain changes in staff, teaching procedures, and discipline. The school was functioning again, but the damage to the morale of the staff was reflected in the absence of regular teachers, the behavior of the children, and the bedlam in every unsupervised corner of the building. It was apparent that the staff had lost the confidence of the children as well as of the community.

In order to develop a picture of the scope of the problem of the ghetto school, let me describe briefly a school visited recently.

School A is a five storied brick building located in the middle of the New York black ghetto. The school building was old at the turn of the century and is far removed in appearance from the glittering suburban palaces constructed for elementary pupils in the 1960's. Surrounded by a high wire fence, evidence of security measures is everywhere. A guided walk to the main office reveals that neighborhood parents, employed by the school, guard each door and the corridors. One receives the statistics of the school from a bustling assistant principal. Into a building originally built to accommodate 1,000 pupils are crowded 2,150 pupils. Sixty percent of these are Spanish-speaking Puerto Rican children whose parents have recently arrived in New York. Most of the families had exchanged the poverty of rural Puerto Rico for the poverty of the New York slums. Thirty-eight percent of the population are the children of black parents who have fled to this northern city from deep southern cities and farms. There is an impressive evidence of high morale as far as the professional, paraprofessional, and nonprofessional staff is concerned. While the teaching and administrative staff is virtually all white and the paraprofessionals black or Spanish-speaking, relationships are observably good. There is little or no need for drastic disciplinary measures in the school. Fear stalks the halls, however, because of oc-

casional forays by intruders from outside who, out of mischief, rage, or sickness, invade the school, assault teachers and pupils alike, and flee, leaving the school in turmoil.

Classroom doors are inevitably locked and pupils do not have freedom of movement outside the classroom. Depending upon the quality of the teacher, the grade, and the grouping of the children, the classrooms can be quiet, fairly efficient learning centers or places of turmoil and shouting, moving people, with teachers often reduced to impotency by the confusion.

In April the original homogeneously grouped classes have become quite mixed because of a more than 100 percent turnover of pupils since September. No teacher visited had less than forty children registered during the year while some had as many as seventy names on their class lists. The enrollment is now thirty pupils in each class.

Of ten first grade classes only two or three have pupils who are learning to read on the expected level. In sixth grade one class in eight has pupils reading at grade level. The bulk of the sixth grade pupils will leave the elementary school in June reading on a third or fourth grade level. Many of these pupils will have received instruction on the first and second grade level before leaving this school.

Studies of the pupils reveal that they have certain common characteristics which evidently influence their ability to learn to read successfully. The basic common factor is socioeconomic. It seems that the occupation of their parents, level of income, education and attitude of parents, the books in the home, and the involvement of parents with the reading of their children, all bear on the reading status of the children in the school. The socioeconomic level of most families is well below the mean of the nation. Most of the parents do menial work and are often unemployed. Many English-speaking parents are illiterate or semiliterate, while often the Spanish-speaking parents lack the ability to read in either their own language or English. Until recently, the parents were passive in their reaction to the school, and any parent-school interaction was originated by the school and usually concerned absenteeism, truancy, or behavior problems. Today more parents are actively con-

cerned with the school and occasionally lash out against teachers or administrators. Their complaints include charges of racism, excessive punishment of their children, or lack of relevant teaching.

The corps of protesting parents is small, but there is no question that the problems of School #4 in Rochester, Croton in Syracuse, and the schools in Ocean Hill-Brownsville will spread throughout the ghettos of the nation. While parents will not know how to help or provide an adequate home environment for their children, they will recognize the general failure of their schools to provide a suitable education for their children.

There are few, if any, books in the homes and parents seldom read to their children. While many parents have an intense desire for their children to receive an education, the problems of daily living overwhelm them and force them to neglect their children while seeking the means to support them.

There are other characteristics which seem prevalent among these poor children. They lack the security of both success and protection. They are exposed daily to violence and failure. They receive inconsistent instruction as they move from school to school or from teacher to teacher. Teacher mobility is at its height in the ghetto school. Instructional gaps are particularly obvious in reading. Children enter the middle grades without records, and there is little time for a thorough diagnosis of their reading status.

The daily attendance of the ghetto pupils is significantly lower than pupils in more favored schools. Retention is high and pupils have often become convinced that they are stupid and cannot learn.

School A is filled with primary pupils who cannot learn adequately, and intermediate pupils who are thoroughly discouraged by their repeated failures.

The school administrators throw up their hands in despair as pupils with whom they have spent many hours suddenly leave for another school, or when a highly able teacher gives up and is replaced by a frightened, poorly trained, probationary teacher.

The school, like others in the ghetto, has tried in dozens of ways to develop a successful reading program with the poverty stricken transient population. Experiments in reading, supported by huge sums from the USOE and various foundations have been

started and abandoned. University professors have brought teams into the school to test the pupils and administer a short term reading experiment. After a few months, a year, or several years, the team disappears, a report is filed, and by the time news of the "success" of the experiment has caused others to visit the school, the experiment has long since been forgotten and it is difficult to find a teacher who remembers it or pupils who were participants.

I am sure that you have read about, visited, or worked in a school such as A. You are also aware that such schools are producing as terminal students some 660,000 functional illiterates each year.

Is there a solution to the problem? Are there programs which might better equip teachers to teach in such unfavorable situations? Are there methods and materials which are most appropriate for teaching the children of poverty and despair?

Certainly there are a few examples of miracles in instruction in the ghetto; these have received publicity throughout the country. *The Urban Review*, the magazine of the city, has reported schools which seem to produce successful readers in spite of the fact that the pupils have the problems described above. The peculiar chemistry of one successful school does not seem transferable. However, out of the experiments reported and the successful programs visited, we have developed a few ideas which would seem relevant to the establishment of a successful reading program in the center city schools.

A Suggested Program

Dlabal and Hanson (*4*) have suggested, on the basis of the results of a study they have conducted, that we examine those who are going to teach the disadvantaged and select only those who fit certain psychological, sociological, and educational criteria. The study has many useful suggestions and experienced administrators would probably confirm the value of the specific characteristics pointed out as decisive.

If we were willing as a profession to choose only the teachers most qualified to teach the ghetto child, our program would be off to probable success. In our view the teacher is the most important

variable in the successful ghetto school. Several school administrators suggest that the ghetto teacher must have more preparation, experience, and psychological maturity than teachers in less complicated schools. The teacher must know how to teach the basic skills of reading, spelling, and arithmetic. In addition, he must approach both teaching and the social situation in ghetto schools in a realistic but flexible manner.

While dedication is necessary, the zeal or fervor of the do-good teacher who volunteers out of a fit of emotion raised by the dilemma of the poor seems to die out as quickly as some revival-induced religious fervor. There are good—even superior—teachers in ghetto schools and their effect on the children in their classes is remarkable. But, alas, they are a minority of teachers in these schools.

It is probable that teachers in ghetto schools need the same kind of material incentives as those who serve the United States in so-called dangerous areas abroad. Bedford-Stuyvesant is certainly a more volatile and dangerous neighborhood in every way imaginable than the Cambodia in which the author served with a 25 percent bonus during 1957.

Because of the transient nature of the school, the lack of records, and the many unknown qualities of the entering students, diagnostic facilities are a must. It is suggested that several staff members serve as diagnosticians and prepare for each teacher an accurate picture of the learning status of each child who joins an ongoing class. Title I or any other funds might well be spent in this effort. Certainly resource personnel ought to be available from the university reading centers as well as from the teaching staff itself. We are convinced as we observe the staffing of the ghetto schools that help could be provided for a diagnostic reception center if we wanted to turn our attention and resources to its development.

I would end the remedial program which operates in many schools because remedial teaching done outside the classroom and without follow up in either direction is certainly lacking in purpose or results. After-school programs seemed even more irrelevant than the within school day remedial activity. Instead, I would release a remedial or tutoring staff to do a reception type diagnosis, which

would result in children being placed in a teaching group or in materials more appropriate to the needs of the pupils.

At present, and on the basis of my observation, new children enter a typical ghetto school and sit and wait until an already busy and oftentimes overwhelmed teacher has an opportunity to test the child in an informal way. Such waiting would be trying for an advantaged child in the calm classroom of a middle-class suburb. For the ghetto child the waiting period is often disastrous.

If a teacher could receive a statement of the actual reading status of pupils and a few suggestions for immediate treatment, new children could enter into the classroom scene on a successful basis almost immediately. The effect might be astonishingly beneficial.

Again on the level of programing is the decision concerning grouping. If we are going to continue so-called homogeneous grouping or tracking, then the classes at the bottom of the scale must be much smaller in size or provided with more help.

It is readily observable that the size of the class and the presence or absence of aides makes a difference in the classroom atmosphere and the possibility of adequate learning. While some experiments have suggested that class size was not a relevant factor in successful teaching, our observations and instincts would reject such findings as invalid for the center city pupils. We recommend that class size of the poor pupils in grades be reduced to a ratio of not more than 1:10 for general activities and 1:5 for reading instruction. It is also suggested that simple cardboard or other types of dividers be used to separate the small group taught from other pupils. We have evidence that the inattentiveness of ghetto pupils is caused from overexposure to the total scene and that the pupils need to have the general classroom hidden from view. People working with hyperactive children have been aware for years of the need for limiting the environmental distractions in the teaching situation. Ghetto children are as disturbed and hyperactive normally as the emotionally disturbed so-called "wall-climbers" of our suburban schools. For the latter we provide learning disability classes with 4-5 pupils per teacher and a quiet undisturbed learning situation.

We will have to develop as quickly as possible well-trained

paraprofessionals who will have teaching responsibilities and be supervised by the classroom teachers. This could be one answer to the problem of teacher and space shortage.

We cannot arrange our classes homogeneously and expect the teachers of the poorest groups to do as successful a job with the same number of pupils as those with superior pupils; and yet that seems to be the strategy. The difference between the highest achieving homogeneous class and the lowest achieving homogeneous class of the same grade is almost unmeasurable in terms of the possibility of successful teaching. If we do have classes composed of our poorest pupils, then they must be very small classes in which the pupils receive almost individual instruction.

A number of experiments with materials and methods reveal that we have still to develop the perfect material or method for the teaching of children to read. But while we await the flawless procedure, we have had demonstrated many likely aspects of a successful approach.

We have learned that instant rewards relate to reading achievement. Clark and Walberg (*2*) have suggested that massive rewards influence reading achievement. Rogers (*10*) and others suggest that disadvantaged pupils are capable of expressing ideas and learning visually as ably as advantaged pupils, although they are less able in verbal skills. He employs visual approaches in teaching the disadvantaged, and certainly this could be applied to early reading instruction. Carlton and Moor (*1*) have demonstrated that self-directive dramatizations of stories by disadvantaged pupils result in significant gains in reading when compared to the usual approaches using the oral-silent reading of basal readers.

Ecroyd (*5*) and others suggest that we consider the use of the language of disadvantaged pupils as a means of teaching them to read; that we take advantage of the oral language and vocabulary knowledge of the pupils rather than ignore it because it is nonstandard. Language experience approaches to early vocabulary and comprehension development, based on the spoken language of the child, might and can provide a more relevant base for reading than the imposed language of the standardized text. There is no question that pupils of the ghetto have a language base which could be cap-

italized upon. It is also noted by Cohen (*3*) that the culturally deprived child depends upon school for language development and general verbal intelligence more than the middle-class child.

If we capitalized on the language base of the disadvantaged child by drawing his initial reading vocabulary from his own listening and speaking vocabulary and then building a program of language relevant in terms of the experiences and understanding of the disadvantaged, we might be more successful than we have been when we have imposed on these children text materials and methods suitable for advantaged middle-class pupils who entered school with a language more or less identical with that of the materials used in teaching them to read.

We might also consider in our program, as does Feitelson (*7*), the observed fact that the attention span of disadvantaged students tends to be short and their concentration poor, and use a method which relies mainly on short periods of concentrated learning. Feitelson also suggests that the disadvantaged child is unable to defer gratification, and this suggests that his assigned lessons be short and knowledge of success almost instantaneous. It is known that the culturally disadvantaged find it virtually impossible to deal with failure, especially the failure made obvious by odious comparison. This suggests a program which allows individuals to progress on their own, measuring progress against their own achievement rather than by comparison with other pupils. This, of course, is easier said than done if one observes the competition which arises when children are working on an individual basis.

Tied in with the inability of disadvantaged children to concentrate and cope with failure is the whole issue of achievement testing. It is obvious to many teachers that many group tests used to measure the reading progress of center city children are irrelevant, both in terms of the content tested and the norms obtained through the standardization of the tests. In a very interesting article, "Planting Pansies on the Roof," Miriam Wasserman (*12*) points out the seeming invalidity of the reading tests used to measure the achievement of New York City pupils.

In summary, we have suggested, in effect, that the reading program for the center city child be tailored to suit his needs. It is

apparent that classes must be small, teaching materials based on the language of the pupil, lessons short and rewards for achievement immediate, failure made virtually impossible, and evaluation valid and specific to the population and program they have experienced.

The hope of the center city lies in a massive effort involving money, personnel, and strategies. We have them all, but our nation needs to be convinced that we must divert our resources of men, money, and know-how to the solution of one of our most critical problems, teaching the urban child to read.

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Linguistic Considerations in Reading Disability

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LANGUAGE is more an intellectual than an "environmental" or "physiological" component of the process of reading, and therefore it must be an intellectual component of the disabilities suffered by some persons in learning to read.

The analysis and treatment of reading disability may be separated into those considerations which are appropriate to psychology, to pedagogy, and to linguistics. After any such division, the linguist is likely to see his role as most important in diagnosis and important in treatment perhaps largely to the extent that he views his function as that of writing a better grammar of the language being taught.

If linguistic factors are not viewed as a major causal element in reading disability—conceivably pedagogy or psychology might be—linguistics is somehow involved either as a subsidiary feature of the reading process or more likely a discipline suspected of being a tool in the analysis and treatment of reading disability. The linguist can indeed suggest areas in which not reading disability so much as reading difficulty can be obviated by a better understanding of the patterns of the language being learned, and ultimately he can solve a few problems by writing grammars which are more humanely and humanly oriented. He also has something to say about distinguishing between genuine disability and those troubles which arise when different aspects of language are associated in the teaching-learning situation.

The idiolectal system that a child has fully learned by the time he is five or six, that which enables him to communicate orally about most of his needs, is simpler and more fragmentary than the language system shared by highly literate adults, upon which the system of English writing is based. Therefore, as soon as children have begun to acquire the mechanics of reading and writing sentences that they might utter or orally understand, they need to expand their

knowledge of the system of the English language they will use as young adults.

This is not to deny that the language of an individual at all stages has certain features which are unique to that particular stage in the development of language skills. The very fact that a child lacks certain vocabulary items must mean that he handles the vocabulary he does have in a somewhat different way from the habit of adults or children of other ages. Or one can guess that certain communication features proliferate in their own times. For instance, the affective vocabulary, the vocabulary of groans, grimaces, laughter, and tears, is obviously very large in the child who has yet to learn to read, and it possibly becomes progressively smaller as the child learns words which can take the place of or describe his feelings. The strongest statement we have ever heard of the unique characteristics of the language and language experience of the child was made by Kenneth L. Pike, who suggested that language is transmitted from generation to generation by the young school child who was, in his view, also responsible for most important language change.

As he begins his reading—his formal educational experience—the child is occupied with a series of problems. In the most general sense, he faces the problems of matching his speech to a set of written symbols and of associating ideas he already has with written symbols. Closely connected with the development of his skill in matching speech to writing and writing to speech will be the matching of new concepts with vocabulary and, where vocabulary is "taught," of matching new concepts to both printed symbols and spoken sounds.

Complicating this rather straightforward set of matching problems will be the business of learning a new style of speech that exists only in writing and in certain formal presentations. It is not by chance that we are haunted by the idea that a sentence expresses a complete thought in arrangements that our teachers would accept as sentences. For the child, normal problems in reading and writing consist of the matching problems—the problem of redundancy, or style, and the problem of new words and ideas. His experience up to the time of learning reading and writing has demanded neither

frequent arbitrary visual symbolization nor completeness beyond the assurance of knowing he is understood. The child has demanded only momentary functional utility from language. At the age of five or six, he is asked to seriously consider that language may not be momentary but capable of artificial extension in time. And he is asked to consider it as something else than merely functional. As he learns formal reading and writing, he begins the business of learning that language may also have, and indeed in all its occurrences does have, culturally determined aesthetic values.

In all of this the linguist plays a humble role. First, the matching problems.

The child's idiolect contains many homonyms that he will discover are spelled differently, for example, *pair, pare, pear,* and so on. What he may have thought to be one word with several different meanings turns out to be two or more words, and he must match up the semantic differentiae that correlate with the different spellings. Presented with such groups as the /péhr/ group, he must adjust, among other things, his definition of "word." When a child speaks of a word he means one sequence of sounds that designates a loosely associated set of objects and ideas around him; the grouping is not necessarily rational in any sense that he can conceive. It is arbitrary. Once he has learned a few *sound-alikes* that are *spell-differents,* the least adjustment he can make in his definition of a word is that it is any isolable sound sequence which sounds the same and is spelled the same. I have no idea whether, or at what stage in his development, a child includes different meanings as establishing different words. Certainly his definition of a word is largely shaped by his reading experience, until finally a word may become anything he sees written or he can write between spaces.

Once he has learned that homophones are not homographs he will also discover the obverse, that one spelled sequence can represent confusingly different sets of sounds, as in *read* pronounced /réd/ and *read* pronounced /rújd/. In the physical process of actual reading or reading aloud, *pair, pare,* and *pear* offer visual clues to meanings and are confusing for pronunciation, where /rújd/ and /réd/ can be absolutely ambiguous, both as to meaning and pronunciation.

We think it is worth noting that there are at least two, and probably many kinds, of interference involved in problems of homophones and homographs. The case of *pair, pare,* and *pear* must be analyzed at first blush as helpful to the reader, for here the child is given three different clues to meaning for which the speech he has learned up to then has given him only one set of sounds, /péhr/. The written forms are more redundant and, one might hope, somehow easier. But they do extract their pound of effort. The help offered by the written distinction is only available if the three have been memorized—learned—and to the linguist it seems likely that the three must be learned separately and at different times, although here we would want to wait for the psychologist's advice. On the other hand, /rújd/ and /réd/ seem at first glance to create no problems. Since the context may tell the reader which to expect, he will not be troubled and will supply the form which his pronunciation of the language tells him is required. But the answer is not all that easy. If at a guess we say that most *ea* spellings in English are pronounced /íy/, then our reader should probably be protected from /é/ words spelled *ea* until he has reached a stage of development in which the introduction of *read, lead, dead,* and so on, will not be sounded out.

If the /é/ words come early we can expect our reader to be no leader in the eager attempt to reach success. He will have become a casualty of the course.

In one case, *pare, pear,* and *pair,* we have a written distinction that is a learning problem. The student cannot escape the force of the association of the three in that he is obliged to cut up the meaning area which has been to him simply the /péhr/ area. If, on the other hand, he has kept three meaning areas separate in his mind each different and each labeled /péhr/, the discovery of convenient different written tags may be a matter of small joy. In /rújd/ and /réd/, however, two semantic units which have partial semantic-phonetic similarities are ruthlessly brought together by the student's knowledge of reading.

It is problems of these kinds that characterize the complexities of the matching process. The varieties are many and deserve to be rather carefully worked out and classified. They are certainly

among the building blocks that the textbook author ought to bring to his job of creation.

Some of the child's homonyms that are differently spelled are also differently pronounced in dialects with which he may not be familiar. Most speakers of American English today make no distinction in the pronunciation of pairs like *hoarse, horse*; *four, for*; and *mourning, morning*; but many older persons, most Southerners, and some New Englanders, have "close *o*" in the first word of each pair and "open *o*" in the second—a contrast that can be predicted from spelling in the vast majority of cases. Even unconscious knowledge of these dialect features helps to explain what otherwise must appear to be arbitrary differences in spelling, although such knowledge may come for some dialect speakers at a much later time in the language learning process.

An immediate problem exists for the child whose native dialect varies from the standard dialect of the schools, but the case is a pseudo-problem, no matter how serious. Ideally the young child should learn to read under the guidance of a teacher who speaks the child's dialect. Failing this, the teacher must know the dialects of his students and adapt to their exigencies, remembering when he is teaching reading and when speech. As a rule of thumb, a good reading teacher might eschew correcting dialect pronunciation in the reading class. The child ought not to be expected to do two jobs at once. He ought to be allowed to read in his own dialect. He will in any case. Nevertheless, some teachers correct as misreadings, errors which arise out of their ignorance of the dialect of the reader. Consider such traps as *to, two,* and *too.* The dialect of many American Negroes also pronounces *tour* and *tool* as /túw/. It is too much to expect that /túw/ and /túw/ for *tour* and *tool* can have gone unnoticed. I can hear it now: "Johnny, you said /túw/. The word is *tour.*" "That's what I said teacher. I said /túw/."

The teaching of spelling has been handled in a variety of ways. The presentations are guided, so far as we can see, mainly by principles for which psychology or educational psychology should provide the reasons. The principles we have observed are efforts to present groupings of words with common patterns, and the reverse, but often transgressed, rule that items of symbolization, which are

certain to be confused with each other, are relegated to opposite ends of the book; that is, if *ie* words are on page 5, then *ei* words may appropriately appear on page 105. It has been obvious to the teacher that sets of words that are similar can be grouped in the reading or spelling lesson, and in most textbooks there is an effort to make such sets integral parts of the presentation. Although such grouping is little more than a mnemonic device, it is as far as we have gone in many cases. Certainly a student learns from juxtaposing similar things, but this is only a small part of what we ought to be doing. The sets should themselves be arranged in a sequence that moves from easy to difficult, and opposing sets for which interference will be great should be presented in a way that minimizes the inherent oppositions. As a matter of fact, to say that elementary reading materials should be arranged in sequences moving from easy to difficult is the same as to say that they are arranged in a way that minimizes interference. Here, however, we know relatively little. We do not know that items x and y are best learned if x precedes y. The linguist can give some help in predicting likely sequences, and the practical teacher can suggest various typical results, but ultimately we have no real choice yet, except to measure relative difficulty by adding up the errors children make and the difficulties they have in learning to read. The necessity of avoiding mixing or juxtaposing items which create interference has not been sufficiently stressed, in view of the fact that most people can remember at least one pair of words which they have eliminated from their personal spelling control by the simple device of juxtaposition.

Of spelling, it seems useful, then, to point out that whatever problems are reading problems are also probable spelling problems. Where dialect enters into reading, it enters into spelling. Homonyms that are reading problems are also spelling problems. Given this, it seems sensible that spelling is taught as a function of reading and is based on the reading assignment. I believe that such is not always true, although the principle seems to exist in the idea of a language arts program, as distinct from special programs, in individual language skills.

We have given a somewhat simplified picture of the matching process; unfortunately, such a simplification comes only part way

to the truth. The speech learned by the child includes a complicated set of changes and adjustments—a set of rules, if you wish, that allows speech to exist in rather different ways. Mostly what the child hears is presented in a rapid-fire barrage, which really is incomprehensible if taken out of its natural, supportive environment. Most such talking has all the comprehensibility of a recording made of a family Christmas party on a new Christmas tape recorder—all taken out of context, of course. The written version the school child learns is so far from the colloquial that it must appear at times to be almost a different language. The difference is one of speed and completeness, as well as grammar. The slower, more detailed, version serves to clarify or to make comprehension possible in conditions in which talking would otherwise be difficult. Within the child's experience the more detailed kind of speech comes closest to and is usually used as a bridge into the formal written language. The ability to apply a whole range of complex sound shifts that change slow into fast speech is part of that unconscious idiolectal system that the five-year-old brings with him to school.

At a later point in his education a parallel but more arbitrary kind of morphophonemics becomes available to him. Expansion of the child's reading vocabulary in the learned disciplines will introduce large numbers of words from Greek, Latin, and Romance sources that obey rules of pronunciation that are largely unknown to him from his early speaking vocabulary. Knowledge of these rules will explain what would otherwise be exceptions to generalizations about phoneme-grapheme correspondences. For example, awareness of the existence of *legality, rebellion, civilian, Mongolian,* and *cherubic* explains the different spellings of the identical second vowel sounds in *legal, rebel, civil, Mongol,* and *cherub.*

As the child's vocabulary enlarges through reading, he may become aware of other anomalies in spelling that are understandable if one knows what the source language of the word is; for example, *ph* as a spelling for [f] is found primarily in words borrowed from Greek; the "silent" *gh* after *i* is limited to words of native English origin.

There seems to us to be some evidence for assuming that the period of learning to read is one in which each child develops an

extensive internal and private grammar and phonology for his language. The arguments are fairly uncomplicated. Up to the time of learning reading, a child is asked only to mimic what he hears. He uses words which he has heard from others. He is not asked to guess or to create. Now suddenly at the age of five or six he is faced with a set of symbols for sounds he has probably never viewed as separable entities or manipulable. The problem he is faced with once the shock of recognition is past is the problem of prediction. He is asked on the basis of his six years of language and six months of instruction to predict what sounds a sequence of symbols can have and he is even asked, although much later, to predict the meaning that can be assigned to the sequence on the basis of the context of the sequence and his previous experience. The whole problem of reading and the really new thing that faces the child is this requirement for prediction.

The first result is that at this period the child develops his phonology and grammar for his native language from a much simpler to a much more complex instrument. Moreover, the decisions of his new tools are enormously powerful in their ability to persist through time and later reading experience. Some evidence for at least the effects in phonology are well-known to us all. I suppose no one has failed to discover at some time that he is mispronouncing a word which, by chance, he has neither ever spoken nor heard spoken by anyone. Such words belong to his reading vocabulary, and he has learned a pronunciation which he finds is perhaps reasonable but not accepted. I remember having such experiences with *vagary,* which I pronounced /véygtriy/ although this was certainly not an early acquisition in my reading vocabulary. Such mispronunciations tell us quite clearly that we internalize certain rules, predict sounds, and even accept our own versions of new reading materials. Usually, the errors we make in applying our rules or in making our rules are corrected by hearing the words read or used by others, but there is always a residue which survives into high school and college.

More esoteric than our set of rules of sound-making are the rules of formal grammar which we suppose are also receiving some extensive development at this time. With much hesitation, I would

argue that the survival of substandard speech, which a child may have learned at home, into adult speech is achieved at this time by being made to fit the grammar that is evolving in the child's mind. Substandardisms are either eliminated, relegated to a separate dialect which may be spoken at home or with friends, or survive into the child's grammar of the language by being incorporated into his idea of the standard. I managed to continue using "he, she, and it don't" until the usage was scared out of me by the critical sarcasm of a college sophomore roommate. I suppose I knew the rules, yet I was totally unaware of my own usage.

There is one feature of prediction in learning one's own language which is not formed and settled during any early period. This is the ability of native speakers of a language to create new words or to refuse to allow new word creations. To use examples which are familiar, one would accept such a word as *disambiguate,* although I suspect it is an egregious neologism. You feel, for instance, in such sequences as *brute, brutal, brutality; cause, causal, causality;* and *coast, coastal, coastality,* that *causal* and *causality* are mildly suspect while *coastal* is acceptable and *coastality* unacceptable. If the unique language activity of the adult is vocabulary expansion and control, it is not surprising that this particular kind of prediction is not possible until long after the business of learning to read is completed. Nevertheless this control is a final expression of the grammar the child begins to construct as he learns to read. It is even possible to view this skill as the highest language achievement, the true test of nativeness at which all abstract language skills are aiming. It is, after all, easy to write a grammar of what occurs, but the grammar that predicts that *coastality* cannot occur is quite a different creation. It is easy enough to chart the boundaries of words in final *-al* and *-ality,* but to abstract from the patterns of all such examples in the language the possibility that a word one has never heard may either exist or not exist is a major accomplishment. Nor can we say that the skill is achieved by simply learning all of the vocabulary of the language. Even a vast vocabulary would only allow us, on the basis of comparison with what we know exists, to say, "This word exists," or, "It doesn't exist," not, "This is possible, that impossible."

We have not yet touched on the child's problem with redundancy, style, or the complete sentence, beyond a suggestion that some difficulties may exist here and that they are related to the aesthetic aspects of the formal language. Certainly the child has existed in an environment in which his language is mostly functional, serving to supply him with his physical needs and such pleasures as he requires. He may have been exposed to complete sentences during the period when his own grammar created mostly pivot sentences of the order, "Car break," to which his mother may have replied, "Your toy car has broken down," in an attempt to figure out for herself what he was trying to say, perhaps, as much as to correct him. It is probably not relevant to reading problems whether the imposition of formal language style on the child is dictated by real problems of communication or simply the traditional artistic preferences of the community. We are inclined to favor allowing the latter its share, admitting this clarifies the situation a bit.

From the point of view of the child, the requirement is largely arbitrary. If our demands are essentially aesthetic, only aesthetic rewards—an appreciation of beauty—could be used as a justification for our demands. Written language is complex in part because it is limited to a single modality, the printed word. In actual talking, of course, tremendous amounts of information are never verbalized. Gestures, body and head movements, and a variety of references to the surroundings in which a conversation takes place all contribute their share. It is not our intention here to suggest ways of getting out of this quandary which we have labeled the complete sentence problem. We want only to call your attention to this demand as one of the real difficulties for the child who must learn to read and write.

We want to return now to reading disability. So far, what we have said has scarcely touched on such problems. We have outlined some of the thoughts linguists come up with when faced with problems in reading disability. Our conclusion is that in the case of severe physical or psychological trauma, the linguist is needed just about as much as a father at a birthing. In the more subtle occasions of dyslexia or comparable complaints, a linguist might be of some use in describing the symptoms, but a psychologist would be

more useful in almost every possible respect. We see the function of the linguist as consultative but without much promise of great advantages accruing from the consultation.

We do find a place for the linguist in any case in which actual language materials are prepared for student use, whether in testing, teaching, or treatment. With respect to the learning task, in a more general sense we can state our belief that the disabilities experienced by some children in learning to read and write may be overcome if these activities are taught, not as purely mechanical skills, but as part of a unified program of instruction in language, in which the patterns of the total language are well understood by the teacher and become at least matters of unconscious knowledge to the learner.

Psycholinguistics and Reading: Diagnostic Observation

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MODERN EDUCATIONAL RESEARCH seems to be obsessed by statistics. Chall (*2*) has pointed out that some of the virtues of earlier less sophisticated studies (including being "more thoroughly grounded in theory," using "more imaginative instruments to test different components of reading," being "more analytic in presenting test results," and "looking at the learners") are "virtually nonexistent in the recent comparisons, which often present results only in terms of tests of significance on various subtests of standard instruments.

In one area of current investigation, however, experiments with laboratory equipment, control groups, standardized tests, and elaborate statistical techniques are simply not possible. In the developing countries, especially among the ethnic minorities, there are neither funds, trained personnel, nor amenable subjects for the full apparatus of modern statistical research. Insightful diagnostic observation and informal testing are the primary research tools. But, as implied in the quotations from Chall, this may be a blessing as well as a disadvantage.

The second part of this paper presents five very brief summaries of diagnostic observations in various languages. They include a simple test situation (section 1), single observations (sections 2.1 and 4), and summaries of long term observations (sections 2.2 and 3). Most of these observations are primarily psycholinguistic, in that they have to do with the way the subjects manipulate or react to their own languages. They give rise to hypotheses about the nature of the languages involved and have implications for the teaching of reading and writing in these languages.

It should be understood that these five examples are only an

illustrative sampling of the observations which have led to the development of the author's particular pedagogical bias or "method" for teaching reading and writing in the minority languages of the world. That method has three essential elements: 1) The use of the syllable or other pronounceable unit as a matrix for the recognition of individual letters or spelling patterns and the sounding out of content words. 2) The use of phrase or sentence structure as a matrix for teaching the sight recognition of function elements. It is the syntactic structures defined by the function elements which in turn provide the grammatical context within which the content words are sounded out and read. 3) The use of large quantities of connected material, which is linguistically and culturally natural at discourse and paragraph levels as well as at sentence level, to provide adequate practice for the perfection of the reading skills. For fuller treatment of this topic, see Gudschinsky (*5*).

The final section of this paper gives briefly a few thoughts on the possible application of this method to the teaching of reading in English.

Diagnostic Observations

1. Reading Techniques in Hindi

An informal test was set up in Hindi,* designed to answer the question, "In the case of Hindi speakers, what are the basic differences between beginning readers who read well, and those who do not read well?" The subjects of the test were adult pupils of three literacy classes that had just finished working through a Hindi primer. The test involved each of the subjects reading aloud to a tape recorder a passage copied from his primer, a stretch of conversation, and a fable. The investigator carefully compared the tapes with the material being read, listing every error, correction, repetition, and lengthy hesitation. Analysis of these raw data yielded two

* This test was carried out at Literacy House, Lucknow, India, in the winter of 1967-1968, with the cooperation of P. N. Shivpuri, V. Tripathi, and A. R. Siddiqi, of the Literacy House staff. A full description of this test is in preparation.

types of information—the kinds of difficulties encountered by each reader and the techniques used by each reader to overcome his difficulties. Some of the observations from this test follow. (It should be kept in mind that these pupils were reading Devanagari Script, not Roman.)

Pronouncing each letter in isolation produced as many syllables as the word had letters. Only the poorest readers used this as a technique for attacking new words, and they found it almost impossible to blend correctly these individual syllables to make the word. The best readers, on the other hand, used complete syllables as their unit for attacking new words. They had no difficulty in combining such syllables to make complete words.

The most frequent problem in decoding new words, for both poor readers and good readers, lay in the closed syllables (that is, syllables having a final consonant). For the best readers this was a matter of trying, hesitating, and then rereading correctly. Some of the poorest readers were never able to read the closed syllables.

The poorest readers read each individual word with a listing intonation, and gave little evidence of understanding what they were reading. The moderately good readers managed to keep a fairly normal intonation pattern while they hesitated; if they lost their intonation pattern while sounding out a phrase slowly, they reread it to pick up the intonation pattern. The best readers read with natural phrasing and intonation.

The best readers recognized the function morphemes instantly, and used them as a framework in deciphering the content words. The poorest readers had to sound out each function element as though they had never seen it before.

All of the subjects, but especially the poorer readers, tended to misread material to match a preceding error rather than to reread and correct the original error in the light of incongruous following context.

We will mention here only a few of the more obvious hypotheses, both psycholinguistic and pedagogical, that can be drawn from these few data.

First of all, the psycholinguistic unit most useful for sounding out Hindi content words is the syllable. (The psycholinguistic real-

ity of the phoneme is not in question here. See Gudschinsky (*6*) for a discussion of focus and sophistication as factors in the perception of psycholinguistic units.) There are two special problems, however, that are inherent in the Devanagari Script: 1) any consonant symbol in isolation actually represents a syllable consisting of the consonant plus the neutral schwa vowel; and 2) because of historical changes in the pronunciation of Hindi, the graphic syllables of the orthography do not always match the phonemic syllables of speech. [Helen Butt (*1*) has discussed these problems extensively.] The test data indicate that the method by which these subjects learned to read was not adequate for rapid recognition of the phonemic syllables in printed material.

A revised procedure would focus on recognition of the syllables, and the pronunciation of the letters in specific positions within the syllable. All types of syllables would be introduced early so as to allow for adequate practice with closed syllables and complex syllables with consonant clusters.

There is a clear difference in the reader's problems with function elements and content words. Even the rather poor readers could pause to sound out the content words, but sounding out the function words caused discontinuity in the intonation pattern and frequent mistakes in the syntactic structures. This supports the hypothesis that function words should be taught for sight recognition in context, whereas techniques for sounding out words should be used primarily for the content words.

The use of following context to resolve potential ambiguity of words or phrases makes for very difficult reading. If the beginning reader makes a wrong choice in reading the ambiguous phrase, he is more likely to misread the rest of the sentence than to correct his poor choice. It might be well for makers of readability formulas to pay more attention to these kinds of data than to mechanical counts of syllables and words.

It is essential that good reading instruction include much practice in the reading of units larger than a single word. Word by word reading is not meaningful, as evidenced by the listing intonation pattern that is used. It seems evident that the word is not the basic unit of meaning in connected material.

2. Orthographic Problems

2.1. Mazatec, an Amerindian Language of Mexico. In Mazatec there are consonant clusters *xk* and *xt* (the *x* is pronounced like *sh* in *she*) as in the words *xka (leaf)* and *xti (children);* there are clusters *jk* and *jt* (the *j* is pronounced like the *h* in *honey*) as in the words *jko (head)* and *jti (fish);* there is also a cluster *sk* as in the word *ska (play),* but there is no cluster *st*. Eunice Pike reports (in private communication) that Mazatec pupils in general have no difficulty reading the syllables which involve these five consonant clusters. In writing lessons, however, more than once a pupil has asked, "Does *jti* have a *j* or an *s*?"

From this we conclude that psycholinguistically there is complete neutralization of the contrast between *j* and *s* before *t;* the naive speakers of the language do not know which phoneme is present in this environment. (A comparable phenomenon in some dialects of English is the neutralization of vowel contrasts before *r;* does "bear" have the same vowel as "bet" or "bate"?) A pedagogical implication for both Mazatec and English is that arbitrary spelling (spelling which does not exactly match psycholinguistic data) makes far more difficulty in accurate spelling than in effective reading. This leads to a proposal of permissiveness in spelling, where the conventional spelling does not reflect psycholinguistic reality. Such permissiveness would reduce the time and energy spent on spelling lessons, but would not essentially reduce the readability of material written permissively.

2.2. An Amerindian Language of Peru. In one of the Peruvian Indian languages there was a serious problem of orthography. Some of the vowels in that language are nasalized (pronounced with some of the air escaping through the nose), and some are purely oral. In an early attempt to make an orthography, the investigator marked nasalization wherever he heard it. This orthography gave some minor problem for people learning to read; if they paid too much attention to the nasalization marks, they did not read smoothly. They were quite incapable, however, of learning to write the nasalization correctly. Even fluent adult speakers of the language, who were apparently very intelligent, found it difficult to tell the investigator which vowels required nasalization marks.

Because of this problem, the investigator tried a new orthography in which no nasalization was written at all. It turned out that the new orthography could not be read accurately by anyone. Wherever nasalization provided the only difference between words, the readers had difficulty resolving the ambiguity that resulted from not writing the nasalization.

Further linguistic study indicated that some root morphemes were unchangeably either nasalized or oral. Function morphemes changed their nasalization to match the root with which they occurred. The obvious orthographic solution was to write the nasalization always and only on those root morphemes which are always nasalized. The presence or absence of nasalization in the root morphemes determines for the reader whether or not to nasalize the affix morphemes.

This is a deviation from the hypothetically "ideal" phonemic orthography which has one symbol for each phoneme. In the case of the nasalization it is a morphophonemic orthography, in which a morpheme that has more than one shape is always written in its basic shape. This has the further pedagogical implication that the function morphemes so written are to be read as morphemes rather than sounded out phonemically. This orthographic system has no major problems for readers; if the roots are read correctly, the affixes are also pronounced correctly. For writing, however, some inconsistency might be expected: the native speaker of the language might be expected to write nasalization correctly on the roots; he would also write it on the affixes if he noticed it, even though the arbitrary convention required that it not be written. Again, a measure of permissiveness in this regard would reduce the time and energy necessary for developing functional literacy.

The English counterpart to these observations is the use of the suffixes marking plural of nouns, *-s;* third person singular present tense of verbs, *-s;* and past tense of weak verbs, *-ed.* All of these suffixes change as to voicing and syllabicity depending on the final phoneme of the root. Compare the pronunciation of *cats, dogs,* and *bushes; hits, sings,* and *brushes;* and *jumped, hugged,* and *shouted.* Most English speaking pupils seem to learn early to recognize the *-s, -es, -d,* or *-ed* and to pronounce them correctly in reading aloud.

3. *The Syllable as a Psycholinguistic Unit*

Manobo, a Philippine Language. Jean Shand reports (private communication) that Manobos do not learn to recognize syllables easily; older monolingual women apparently do not learn to recognize them at all. All Manobos are resistant to pronouncing isolated syllables. Manobo speaking school teachers object to using syllables as a unit for teaching. Linguistic analysis indicates that all phonological words are at least two syllables in length, with the stress on the penultimate syllable. Function elements of one syllable are never pronounced in isolation but are always a part of a larger phonological word.

This observation led to the rather startling conclusion that in Manobo the syllable is not a primary psycholinguistic unit. This led to the further hypothesis that effective reading lessons must use the couplet (a two syllable sequence) rather than the syllable as the matrix for letter recognition and for sounding out words.

This line of thought may be extrapolated to English. In the great debate between the "traditionalists," the "linguists," and the proponents of a "phonics method," there is argument as to the use of word, syllable, or individual letters in isolation as teaching units. Surely Fries (*3*) is right in insisting that in English the sound system is represented by spelling patterns rather than individual letters. His use of the word as the basic unit for these patterns, however, may be inadequate for the teaching of polysyllabic words, which are difficult to sound out on the basis of monosyllabic word patterns. The use of both syllables and couplets as teaching units might avoid this problem. Contrasts such as that between *hat* and *hate* can be taught in single syllables, but contrasts such as that between *biter, bitter, bidding* and *biding* require couplets as matrices.

4. *Function Words Versus Content Words in English*

Betty Banker reports (private communication) an experience in teaching her six-year-old son to read English. She was using drills in the "families" of words: *at, sat, fat, cat, mat,* etc. She was amazed to notice that her son could read all of the *at* family *except at* it-

self; he could read all of the *and* family except *and* itself; etc. The words which he could not read were, without exception, function words which had no meaning for him in isolation.

This incident should not surprise any experienced teacher. It is surely our common experience that pupils learning to read have much greater difficulty with words such as *this, that,* and *was* than with words such as *vacation, elephant,* or *circus.* What has been lacking until recently was the psycholinguistic distinction between content words and grammatical function words. [See Fries (*3*), and Lefevre (*9*) for recent mention of this problem.]

Unfortunately, for decades the observation that certain words are more difficult for the pupil to remember and recognize led to more intensive drill with flashcards and lists, rather than to a change of technique. It is only with an awareness of the linguistic and psycholinguistic differences in words that it is possible to develop two quite different techniques in reading strategy.

Reading in English

The observations recorded in the previous section, mostly in languages other than English, hint at hypotheses that might be checked out for English as well.

1. As already noted, it is probable that both syllable and couplet are essential as matrices for teaching the spelling patterns of English. The use of monosyllabic words as suggested by Fries (*3*) leaves untaught the patterns that occur only in polysyllabic words: double versus single medial consonants, neutralization of unstressed vowel, etc. On the other hand, as Fries pointed out, the common cvc and cvce spelling patterns account for a major part of all the words in English.

2. Function words and affixes should be taught by sight in context, with help from spelling regularities where these exist, but without heavy reliance on the techniques for sounding out words. The vast majority of the most common words which are also the most irregularly spelled words (so often cited by opponents of "phonics" and "linguistic" methods) are in fact function words, or are

irregularly spelled because of function affixes. Note that this implies that this part of the language be read by morphemes rather than by phonics.

3. A careful control of the order in which the elements of points 1 and 2 are introduced in the reading lessons should permit the use of varied and natural connected material from the beginning. The use of couplets as well as single syllables, and the simultaneous introduction of essential function elements will eliminate the dreary "tongue-twister" effect of the material that depends exclusively on the most productive of the single syllables. The use of such natural material will make possible practice in reading larger stretches.

There has been no opportunity to actually produce such materials and test them (even in the most informal sense). However, a brief examination of some 466 words of running text, chosen at random from a current issue of *The Reader's Digest*, supported the general hypothesis as to the structure of English words. In that minute body of data, the repetition of 60 function words accounted for 220 of the words of the text; the remaining 246 words were repetitions of 180 nouns, verbs, adjectives, and adverbs.

Only 14 of the 60 function words fitted the major spelling patterns described by Fries. The other 46 included minor spelling patterns (*wh, e* pronounced as *ee, y* pronounced as *ai,* or the complete irregularities *one, could,* and *you*).

Forty-four of the monosyllabic content words fitted Fries' major patterns, and an additional 26 represented minor patterns. Only seven were really irregular, and most of these may have belonged with the function words; they included modifiers such as *some* and *half.*

Of the 113 polysyllabic content words, only 11 could be read as simple combinations of the most common monosyllabic spelling patterns, and most of these are transparent compounds such as *football.* An additional 23 could be read as a combination of one or more regularly spelled monosyllables plus one or more affixes.

A majority (64) of the polysyllabic content words have special spelling patterns that can be taught only in couplets: e.g., unstressed vowels, unstressed final syllables such as *-le, -er, -y,* and double ver-

sus single consonants; 30 of these words also have one or more functional affixes.

Only 15 of the polysyllabic content words had unique irregularities or very rare spelling patterns. Included in this group were the Latin and Greek based words, such as *alveolus* and *bronchi*, which would not occur often in general reading.

All of this supports the hypothesis that the bulk of the irregularly spelled words in English are function words, or include function affixes. To use natural material, and yet introduce new elements gradually, a reading method must include both syllables and couplets as matrices for spelling patterns, and must consider the function words and affixes separately from the content words.

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Preventing and Correcting Word Identification Problems

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IN CORRECTIVE AND REMEDIAL SITUATIONS, the two biggest problems that teachers typically face are 1) small and unreliable sight vocabulary and 2) deficient and inconsistent word attack skills. Specific suggestions for helping prevent or correct these problems are too numerous to detail comprehensively, but all teachers, classroom or remedial, should be aware of some basic ways of coping with these problems.

Sight Words

Which Words to Stress?

Words from three different sources must be recognized quickly and accurately if anything resembling true reading is to occur. These sources are the basal reader, content field textbooks, and service words.

Teachers should make lists of words which pupils, individually or corporately, *repeatedly* miss when reading orally from a basal reader. Specific review time should be regularly provided for concentrated practice on these words using one or more of the approaches mentioned below.

Some words in content field textbooks are so common that students should recognize them without hesitation. Examples of these words are shown below.

Mathematics—*length, numbers, many, less*
Social studies—*country, president, forest*
Science—*experiment, electricity, temperature, liquid*

These words can be handled in the same manner as basal words. However, technical or infrequently occurring words such as *acre, plateau, asteroids, oxygen,* and *minuend* should not be considered essential and worthy of review.

Some words, because they occur so frequently in all kinds of material, must be recognized instantly and without confusion if the child is to read independently beyond basal and content field textbooks. Two valuable lists of such service words are Dolch's 220 "Basic Sight Vocabulary" words and Fry's 600 "Instant Words." Dolch's list can be found in

Dolch, *Psychology and Teaching of Reading,* Garrard Press, 1951, 507-508.

Dolch, *Teaching Primary Reading,* Garrard Press, 1960, 255.

Erickson, *Handbook for Teachers of Disabled Readers,* Sernoll, 1966, 63.

Roswell and Natchez, *Reading Disability,* Basic Books, 1964, 239.

Zintz, *Corrective Reading,* Wm. C. Brown, 1966, 42.

Fry's list can be found in

Fry, "Word List for Remedial Reading," *Elementary English,* November 1957; 456-458

Erickson, op cit, 65-68.

Schell and Burns, *Remedial Reading,* Allyn and Bacon, 1968, 361-366.

Children with sight vocabulary problems need to be tested on these service words and appropriate remediation begun for any words which are unknown or on which there is hesitation.

Which Approaches to Use?

Three basic approaches can be used to help children remember words with which they have problems. These, in rank order for treating mild to severe problems, are 1) oral rereading, 2) supplementary practice, and 3) a visual-motor approach.

Troublesome words may be focused on after a basal selection or context field passage has been read silently by asking children

to read orally sentences containing these words. (This procedure assumes the teacher knows or can guess those words which may present more than average memory problems.) Prevention, not correction, is the key attribute of this procedure; it will not help the child who habitually confuses *fill* and *full* or who never remembers *that*.

With some children, memory is so unreliable that mere reseeing is insufficient to embed the visual image deeply enough for unhesitating recall at a later time. These children must have their attention focused on a printed symbol while saying or trying to recall its oral equivalent. For these children, supplementary practice is essential and may be provided in at least three ways: worksheets, games and activities, and tachistoscopic practice.

Three levels of worksheets are possible. The lowest level would provide as many context clues as possible. For example, pupils confusing *want* and *went* could work a sheet such as the following:

WANT WENT

1. Tom _____ to school.
2. Did Rover _____ to go?
3. Who _____ with Tom?

This worksheet forces the child to write each word while saying it and thus helps him remember minor details in the appearance of the word.

A somewhat more difficult level includes words presented in isolation with some kind of contextual clue such as an illustration or a categorical name. (See examples on next page.)

The most difficult level would include rows of words from which children would select and underline those said by the teacher. Obviously, these exercises can be varied in level of difficulty to match the capability of the children.

Games and activities help take the drudgery out of what could be boring, repetitive drill. Some serious disadvantages must be considered: 1) The activities may not focus sufficiently on reading. Pupils may be so interested in *flying to Mars, picking apples,* or *adding feathers to a headdress* that they pay little attention to word learn-

1. plane plate car

2. truck train trick

Write the words that belong together.

Animals		*Buildings*		*Actions*
walk	horse	jump	run	house
fish	school	store	bird	throw

ing. 2) The games may demand too little actual reading. For example, a "fishing" game may consume a disproportionate amount of time in hooking a "fish" (cardboard fish with word on it), passing the pole, etc. 3) The activities may involve too much competition among students and result in the lowest pupil's sinking even lower in self-esteem and initiative. 4) Words are usually presented in isolation, thus minimizing contextual clues and word meaning. Or, a combination of several of these drawbacks may be involved in the activities.

Judicious selection and use of these activities can overcome these disadvantages and contribute enormously to the ease and enjoyment of learning. Two sources of commercial materials and possible teacher-made games and activities are

Spache, *Good Reading for Poor Readers,* Garrard Press, 1968, Ch. 7.

Schubert and Torgerson, *Improving Reading Through Individualized Correction,* Wm. C. Brown, 1968, 86-94.

Children who need to study a word before finally recalling its oral equivalent can frequently profit from work with a tachistoscope

of which there are three common kinds. One is homemade from oak tag, has a hand-operated shutter, and should be operated by the teacher. Directions for making two different kinds can be found in

Bond and Tinker, *Reading Difficulties,* Appleton-Century-Crofts, 1968, 313.

Durrell, *Improvement of Basic Reading Abilities,* Harcourt, Brace, and World, 1956, 177.

One advantage of commercial tachistoscopes is that they can be operated by the pupil. And, as with homemade ones, motivation is high and attention excellent. The most widely used model is the *Flash-X* manufactured by Educational Development Laboratory (EDL), Huntington, New York, which also has extensive word lists at different grade levels to fit into a hand-held device. Most filmstrip projectors can be converted into tachistoscopes by a special attachment with variable speed shutter, or a card held in front of the lens can serve the same purpose. Some suitable filmstrips (and their producers) are

The Society for Visual Education (Chicago),
Speed-i-o-Strip Series (10 strips)
Graded Word Phrases (56 strips)
Learning Through Seeing (Sunland, Calif.),
Word Mastery (12 strips)
Phrase Mastery (12 (strips)
Instant Words & Word Phrases (48 strips).

A last resort for children unable to remember words from memory is some kind of a visual-motor approach in which the child traces a word after scrutinizing it intensely. Bond and Tinker discuss several different tracing procedures and conclude that such methods are of primary value to the severely disabled readers and should be used in conjunction with other methods. Harris recommends adaptation of a tracing system and states that it has been highly successful in his Queens College reading clinic. Readers interested in finding out more about this procedure may examine

Bond and Tinker, *Reading Difficulties,* 471-480.
Harris, *How to Increase Reading Ability,* McKay, 1961, 391-393.

Otto and McMenemy, *Corrective and Remedial Teaching,* Houghton Mifflin, 1966, 166-168.
Roswell and Natchez, *Reading Disability,* 82-83.

Attention is called to the fact that the lowest level of worksheet suggested earlier uses a modified visual-motor approach, and the suggestions for coping with severe cases of word confusion on the following pages embodies elements of such an approach also. When we consider that much of spelling has parts of this procedure in it, it becomes obvious that this is a practical way of preventing many sight recognition problems and deserves widespread use in the primary grades.

Even though these three basic approaches provide additional practice for children with problems, all three should be buttressed and supplemented by a painless approach too often overlooked by teachers addicted to the idea of intensive work as the only solution to distinct problems. This painless approach is independent reading of easy and pleasurable material. A book matched to the child's appropriate reading level will, of necessity, repeat many of the words the child has trouble remembering. If selected by the child, it will hold his attention, force him to try to understand it, and demand that he read each word rather than skipping or substituting words. Primary grade teachers have repeatedly reported that independent reading plays too small a role in their total reading program. For many children, perhaps extensive use of artificial and contrived games, devices, and activities is unnecessary; a natural situation may better provide the necessary review while concomitantly exposing children to quality literature.

What Special Problems to Expect?

Children with a small and unreliable sight vocabulary typically have two special problems: 1) they confuse words of similar configuration and 2) they have exceptional trouble remembering small words with highly abstract meanings.

Almost all children tend to identify a word by looking at the first and/or last letter(s) of a word while paying little attention to the medial letter(s). This overreliance on word configuration is the

primary cause of children confusing *full, fill, fall; wander, wonder; scare, score;* and numerous other highly similar appearing words. One factor over which teachers have some control which may contribute to this problem is the typical phonics program in basal readers which introduces initial and final consonant letter sounds early in the sequence but postpones vowel letter sounds until second grade. Vowel letters are almost always the cause of confused words; consonant letters rarely are. It may be that earlier introduction of medial vowel letter sounds might help children focus attention on the internal parts of words, thus preventing later problems. But, as inoculation does not help children already afflicted with a disease, neither do preventive suggestions help pupils already suffering from word confusion; corrective measures are required.

Authorities agree that children with this problem should be presented with situations which demand that they visually scrutinize words that are minimally different, rather than merely relying on the *gestalt* of the word. A sample exercise follows:

We went for a ride in a _____.
beet boat
Then we _____ home.
came come

Two excellent sources of practical ideas for practice exercises are

Bond and Tinker, *Reading Difficulties,* 324-327 and 342-344.
Wilson, *Diagnostic and Remedial Reading,* Chas. E. Merrill, 1967, 127-129.

Not only are there more words highly similar in configuration than we generally realize, but many of these have abstract meanings which seem to compound the problem many children have of remembering them. For example, *there, their, then, these,* and *those* are repeatedly confused or not remembered as are *on, no, own, how, now,* and *won* or *where, when, were, ever, even,* and *every.* Wilson, the only major author who specifically discusses this common problem, suggests that since these words derive meaning almost totally from context, they should not be taught in isolation but in context. He recommends three ways to meet these criteria: 1) composing an

experience story, 2) drill on prepared phrase cards, and 3) construction of sentences from word cards 7:129-131). The experience story seems equally appropriate as a preventive and as a corrective measure and should be seriously considered by primary grade teachers. Brown and Loper note that self-illustrated picture cards can be used by a child to build a sight vocabulary even though no publisher could get away with pictures as ambiguous as those children would produce. But, they ask, what difference does it make as long as "the child's illustrations make sense to him—and he learns the words" (2:94-95).

With severe cases of word confusion, instruction should be as simplified as possible. Teachers should focus on one word at a time and proceed by small steps from easy to more difficult learnings. The following suggested procedure should be adapted to each child's problems and capabilities.

1. Have child *trace* the word.
2. Have child *copy* the word
   a. from a model.
   b. from memory.
3. Have child *match* the word with similar words
   a. simultaneously (*while* looking at the confused word).
   b. successively (*after* looking at the confused word).
4. Have child *read* the word in context.
5. Have child *pronounce* the word in isolation
   a. untimed.
   b. flashed.

After the child has mastered two confused words individually by this procedure, two more steps can be added to assure absolute mastery.

6. Present two or more similar (confused) words in context to be read orally.
7. Present two or more similar (confused) words in isolation to be pronounced.

Children with less severe confusions may benefit from tachistoscopic work. Some filmstrips (and their producers) are

Psychotechnics (Glenview, Ill.)
Look-A-Like Words
D-P-B Words
Word Discrimination
Teaching Technology Corp. (North Hollywood, Calif.)
Confused Words (with correlated workbooks)
Confused Word Phrases (with correlated workbooks)

Comments

Even children who have no problems learning to read require numerous presentations of words to reach memorization mastery. The procedures mentioned above are merely different ways of repeating the words children have difficulty remembering. Three things seem evident about the repetition of words and the approaches: 1) It seems reasonable that if a child has failed to learn to remember a word by one procedure, correction should not be based solely on the repeated use of that procedure. A change, possibly tentative and temporary, is in order. 2) With children requiring an unusually large number of word repetitions, variety is essential. Several of the described approaches should be used to alleviate monotony and to maintain interest in learning. 3) Even though word repetition is usually successful, mere repetition is insufficient. Children need a variety of ways other than sheer memory for attacking an unrecognized word. And the more weapons a child has to attack an "enemy," the shorter the battle, the fewer the casualties, and the surer the victory. Beginning or disabled readers need a whole arsenal of weapons, and teachers who fail to teach phonic and structural analysis, context clues, and dictionary usage are merely handing the child a pop gun while requiring him to storm an enemy stronghold.

Phonic and Structural Analysis

Which Elements to Teach When?

How to determine which phonic and structural analysis elements to teach—and when to teach them—is a real and practical problem. For most classroom teachers, an essential tool in answering these questions is the skills chart accompanying the basal reader or

in the local curriculum guide. After determining the child's appropriate instructional level, the teacher can use this outline to see what skills were (or should have been) introduced previously and at what level they were taught. This chart provides a rough idea of the skills in which the child most likely is deficient and gives some general clues as to the sequence in which these skills should be taught. Further testing and observation can refine these initial judgments and help zero in on the most deficient and crucial skills. Similar guides can be found in

Edward Fry, "A Frequency Approach to Phonics," *Elementary English,* 41 (November 1964), 759-765.

Jack Bagford, *Phonics: Its Role in Teaching Reading,* Sernoll, 1967.

William S. Gray, *On Their Own in Reading,* Scott, Foresman, 1960.

Arthur W. Heilman, *Phonics in Proper Perspective,* Chas. E. Merrill, 1968.

Without such references, few teachers know the skills taught at earlier levels which must be retaught in a corrective or remedial situation. Thus, such resources play a fundamental role in any remediation program.

How Much Should Be Taught and How?

A fourth grader capable of grade level reading but performing at a low second grade level is so far behind, lacks so many skills, and presents so many classroom problems that the temptation is great to present all the missing skills in a short period of time to boost him to his potential level. But if such a temptation prevails, the skills will probably only be presented, not learned. McCullough warned against this temptation by noting, "Rabbits don't become kangaroos by eating carrots faster (7)."

It is easy to assume that children with reading skill deficiencies have been malnourished on a meager diet of sight words and have not had a rich, balanced diet of varied word attack skills. Such is usually not the case. Rather, they probably have been presented three balanced, but skimpy, meals daily and have only picked at

these and never really cleaned up their plate and have never asked for, or been given, seconds! They require regular meals with large, balanced portions—eaten slowly and thoroughly digested. One way to assure digestion and to avoid gastric hyperacidity is to use the PPAR cycle, which simply means that one element or principle is presented, practiced, applied, and reviewed before another one is introduced. Corrective and remedial readers have myriad unrelated bits and pieces of word attack skills floating about in their memory which they are unable to use because they never really gained mastery in applying them in realistic situations. Using the PPAR cycle of skills instruction should transform the unintelligible into the usable by assuring mastery of an element or principle before introduction of another one.

In the PPAR cycle, practice should be in a situation structured to assure a maximum degree of success; ease, not difficulty, and definiteness, not ambiguity, should characterize such exercises. Just as we deliberately select reading materials guaranteed to minimize frustration, so should we choose or design practice activities to do the same. Worksheets and other practice activities should be judged by standards similar to those used in an informal reading inventory to determine the proper level of reading materials.

"Mrs. Smith, what's this word?" is a persistent litany in many classrooms and the ubiquitous response is, "Johnny, we worked just yesterday on how to sound out words like that." Phonic elements recently presented and practiced just are not (can't be?) applied. A prime cause of this difficulty may be that practice, of necessity, occurs in an artificial situation, usually on a worksheet or a similar exercise, and there is little or no carryover of this learning to actual reading situations. Teachers should repeatedly show pupils how learned skills can be used in reading. In introducing words prior to reading a selection, the teacher can select words which embody recently studied elements or principles and ask pupils how they were able to figure out the pronunciations. Or, after reading a selection, the teacher can list or have pupils find words that can be attacked using newly learned skills. Not only should this procedure encourage children to actually use their knowledge, but it should also promote their feel-

ing of independence and confidence—major components in reading success. Thus, two birds with one stone.

An integral part of the PPAR cycle should be periodic, cumulative review of several elements. The memory of the average child is faulty, subject to partial forgetting and inconsistent performance even under the most fortuitous circumstances, so it is not surprising that problem readers respond identically. For best retention, these reviews should stress the application of elements or principles by using unknown words. Re-using words from prior practices facilitates mere recall, a lower level cognitive behavior than application of knowledge. Unknown words more truly correspond to realistic situations children will face in which they must independently figure out a new word. Psychology has unanimously affirmed that the more practice situations resemble use situations, the better the learning will function in the use situations. Ignoring so fundamental a principle only impedes mastery and attests to slovenly unprofessionalness.

Some Comments on Instruction

Research and experience have shown some instructional guidelines that are gaining such increased acceptance and widespread use that they should be known and practiced. Some of the more significant ones follow.

1. Two auditory aspects are so fundamental to learning both phonic and structural analysis that ignoring or slighting them virtually ensures the failure of this approach. These are auditory discrimination and auditory blending.

A child who can't differentiate auditorily between /red/ and /rid/ may pronounce *pet* as /pit/ because he assigns the short *i* sound to the letter *e*. Such a minor event may have major consequences if the erroneous pronunciation distorts the whole meaning of the sentence, "That is my pet." Auditory discrimination ability must be evaluated and, if deficient, be trained before intensive instuction in highly similar phonemes is undertaken. So much material for instruction is available in basal reader readiness books and other commercial materials, that there seems little need to list sample exercises or possible sources. For evaluation, even though numerous

readiness tests measure auditory discrimination, there are only a few standardized tests with appropriate subtests. Some of these are

Stanford Diagnostic Reading Test, Level I. Harcourt, Brace and World, 1966.

Gates-McKillop Reading Diagnostic Tests. Bureau of Publications, Teachers College, Columbia University, 1962.

Wepman Auditory Discrimination Test. Language Research Associates, 1958.

Auditory blending is an old skill receiving renewed attention, possibly because Chall, Roswell, and Blumenthal found it a good predictor of beginning reading success (*3*). After dividing an unrecognized word into either its constituent phonemes or syllables, these elements must be fused to form an auditorily familiar word. Children deficient in this ability flounder miserably in learning and applying either phonics or syllabication. Both levels of the Stanford Diagnostic Reading Test measure this ability, as does the Gates-McKillop Reading Diagnostic Tests, both listed above. Two other tests valuable in assessing this skill are

Diagnostic Reading Scales, California Test Bureau, 1963.

Roswell-Chall Auditory Blending Test, Essay Press, 1963.

Suggested specific practices for helping children synthesize these separate sounds in words may be found in

Roswell and Natchez, *Reading Disability,* 90-91.

Bond and Tinker, *Reading Difficulties,* 337-339.

Brown and Loper, "Word Recognition in the Elementary School," in Marjorie Johnson and Roy Kress (Eds.), *Corrective Reading in the Elementary Classroom,* Perspectives in Reading No. 6. Newark, Del.: International Reading Association, 1967, 106.

2. Undoubtedly the inconsistent phoneme-grapheme relationship in English spelling is one cause of children's inability to apply word attack skills consistently. One way to have children use these skills in a functional situation is to have them practice in materials containing only phonemically regular words, i.e., material in which

words such as *come, are, once,* and *have* are intentionally omitted or their occurrence strictly controlled. Most linguistic readers can be used or adapted for this purpose. Some publishers of such readers are Harper and Row; Harcourt, Brace and World; Chas. E. Merrill; Science Research Associates; and D. C. Heath. Some materials written expressly for this use are

Phonics in Rhyme, Teaching Technology, 1967.
Phonic Readers, Wenkart, 1961.
Easy Road to Reading Improvement Series, Marand, 1966.

3. Numerous recent studies such as Clymer's (*4*) have shown that some of the widely taught phonic and structural analysis principles have feet of clay. In corrective and remedial situations, confusing or infrequently used elements or principles should be stringently avoided. Even though each teacher will have to decide this on the basis of the particular children being taught, the author has reason to question whether the following learnings should be included in most remedial instruction: 1) the "soft" sound of *g,* 2) *r*-controlled vowels, 3) accenting, and 4) meanings of affixes. Teachers should be discriminative in what they teach; they should feel free to omit a principle that has little applicability or to revise one so it has greater utility.

4. Children deficient in word attack skills need more than normal repetition and practice to attain satisfactory competency—just as is necessary in learning sight words. Varied repetition is highly important for the sake of both learning and motivation. To meet the wide range of individual learning modalities and to assure adequate repetition without boredom, media of all kinds should supplement textual materials. Games, filmstrips, transparencies, records and tapes, and programed materials are all available for providing practice with word attack skills. The best bibliographies of such materials and ideas are

Dechant, *Diagnosis and Remediation of Reading Disabilities,* Parker, 1968, ch. 7.
Schubert and Torgerson, *Improving Reading through Individualized Correction,* 97-121.

Comments

Individual word attack skills cannot function in isolation. Initial consonant letters can be sounded accurately without sounding the following vowel letter; there is no sense in syllabicating a word if the reader can't blend the parts together; and syllabication may produce only unintelligible jibberish without correct accentuation. Since all these skills must work together, instruction cannot focus only on one skill without incidentally incorporating several other facets. The only time skills can be isolated is in a textbook on reading instruction. Piecemeal, unrelated instruction tends to produce highly competent "sounders" who are unable to apply their knowledge functionally in true reading situations, thus negating the ultimate purpose of instruction. A limited program which lacks balance is therefore, in the long run, self-defeating.

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Developing Classroom Reading Centers

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THE IDEA of classroom reading centers is neither new nor original. Many classroom teachers have provided interest centers of various types. (Roach van Allen has suggested many such types of centers in his lectures and publications.) Others have provided comfortable pieces of lounging furniture in nooks and corners of their classrooms where children could relax and enjoy a reading experience. The classroom reading center brings stimulating points of interest and an abundance of reading materials to a comfortable setting where children can browse or read during free or directed periods of time.

The Purpose of a Classroom Reading Center

Every teacher has the challenge of helping children accomplish two major objectives in reading: 1) to learn how to read and 2) to develop a habit of and a love for reading. Classroom reading centers can help a teacher accomplish both of these objectives. By establishing and using a pleasant, comfortable reading atmosphere displaying many stimulating reading materials, a teacher can develop within children a love for reading, and, at the same time, provide practices in reading skills of the most meaningful nature.

Developing a Habit of and a Love for Reading

Where do adults do their free reading? In a straight, hard chair sitting at the kitchen table? Generally not. More than likely it is in a comfortable chair, lying on a couch, propped up on a pillow in bed, or perhaps lying on the floor. Most adults seek a comfortable, relaxed position in a warm, quiet atmosphere.

When do adults do their free reading? Most adults read on one of two occasions. One is when they have acquired a particular book, magazine, or reading material that has caught their interest. Under

this condition they will plan to set aside a period (and a comfortable place) for reading it. On other occcasions they will just move to a comfortable setting and the most available and stimulating activity will capture their attention. It may be the TV or it may be an interesting magazine, book, or pamphlet. It often depends on which is closest at hand.

A reading center should encourage both of the needs described in the above paragraphs. It will provide children with an inviting, comfortable setting and stimulating, interest-catching materials.

A well-prepared reading center can be one of the most valuable aspects of the classroom for setting a "reading mood" and for establishing a positive attitude toward school within children. Children who have had positive experiences with reading within the classroom will have "warm" feelings toward reading and school. Whether or not children will learn to enjoy reading through the use of a classroom reading center is dependent upon the degree to which their interest is captured by the materials in the center, the availability of reading materials at their reading levels, and the amount of time they are allowed to use the center. If these three conditions are met, children will spend much time browsing, playing, investigating, and reading in the center. Interest can be expanded in a very "painless" and natural way and children will begin to establish a satisfying reading habit—a habit that will bring pleasure and success throughout childhood and adult life.

Providing Application and Practice in Reading Skills

Since extensive reading often is the direct result of good attitudes toward reading, providing application and practice in reading skills might be one of the most important things a classroom teacher can do in order to develop reading skills. One of the best ways to teach children to read is to get them *to* read. A good reading center can be an invaluable aid in achieving this objective. Once a teacher has introduced phonics, structural analysis, comprehension, or other skills in reading, it is possible for children to practice and learn many of the skills independently. The teacher, by placing well-chosen books, magazines, pamphlets, charts, games, puzzles, and manipulative devices in the reading center, can introduce children

to the use of the materials and then permit these materials to be used during free time and selected periods during the day. This is another condition under which learning takes place "painlessly." The teacher, having introduced a skill, now uses the reading center as a means of having the students practice the skill under satisfying and enjoyable conditions.

Kinds of Reading Centers

Primarily, there are three kinds of reading centers: 1) the special interest center, 2) the diversified center, and 3) the combination center. Each center has special appeal and because a teacher will want to vary his centers during the year, a more detailed description of each follows.

The Special Interest Center

The special interest reading center features a specific topic or subject for a specific length of time: for example, Indians, pioneers, sea life, other lands, or an area of literature. It will often be built around a unit of study in social studies. science, music, art, or other curriculum areas. Bulletin boards, charts, realia, and an abundance of reading materials on a single subject are displayed in an intriguing manner. Small placards with brief accounts of information or motivating questions are posted in easily viewed places. The reading material will include library books, special collections of subject-centered books, magazines, pamphlets, filmstrips, literary readers, poetry, songs, and charts relating to the chosen theme. In addition, tape recordings and records on the selected theme are very appropriate.

The Diversified Reading Center

The diversified center has global appeal and contains a wide variety of reading materials which cover many interest areas, levels of reading difficulties, and forms of literature. No central theme is featured. It relies more heavily on comfort and high interest materials as the motivating force for its use. This center, again, will contain the many types of reading materials described in special interest

centers, but with unlimited topics selection. This center becomes somewhat permanent and even though reading materials are added and revolved, many elements will remain unchanged.

The Combination Center

The combination center includes features of both of the above. In it are found materials that are somewhat permanent such as word games, encyclopedias, dictionaries, or maps; but there is also provision for emphasis of specific topics. Children who use the center may desire to play skill development games, refer to and read materials with which they are familiar already, or they may be enticed into reading materials to which they are exposed through theme presentation.

Contents of Reading Centers

Three major types of materials should be considered in setting up centers: furnishings, reading materials, and realia.

Furnishings

The main emphasis of furnishings should be *comfort*. Soft, cushioned couches and chairs are especially good. Rocking chairs both large and small are comfortable and inviting. While not imperative, carpeting or a large rug is very desirable. Children can sit or lie on pillows or cushions on a covered floor area remaining clean and comfortable in a home-like atmosphere. Small tables, book cases, and magazine display racks are important for effective display of materials. Where large window areas exist, drapes add warmth and atmosphere as well as control excessive direct light. In some centers, table or floor lamps are necessary for adequate lighting. Globes, aquariums, terrariums, animal cages, and chart racks are examples of other furnishings that add much to the success of a center.

Reading Materials

Materials are probably the single most important factor in a successful center. In selecting materials the teacher should keep in

mind 1) multiple reading levels, 2) a wide variety of subject interest areas, and 3) variety in literary forms.

The differing levels of reading progress within a classroom make it necessary to provide reading materials at several levels. The lower grades will require materials ranging in difficulty from simple picture books to books at least two grades above grade level. The intermediate grades will need materials from three to four grade levels below to three to four grade levels above the actual grade level to stimulate the abilities of every child.

A multitude of interest areas should be represented at as many reading levels as possible. Science, social studies, art, music, animal stories, mysteries, fables, sports, romance, travel, and biographies are only a few of the possible interest areas.

In addition, as many literary forms as possible should be represented. These would include short stories, novels, plays, poetry, letters, editorials, factual discourses, jokes, anecdotes, comics, and many others.

The sources of such information are plentiful. Library books of both fiction and nonfiction should be available in groups of 50 to 200 in a center. Many companies now produce collections of appropriate books; for example, the Macmillan *Reading Spectrum* or Scott, Foresman's *Invitation to Personal Reading*. The *Little Owl Series* by Holt, Rinehart and Winston is another example of such a collection.

Large collections of literary readers containing a variety of the best in children's literature are a must for a good center. At least twelve companies now produce good sets of these readers. Books of plays and books of poetry should also be displayed and reading games should be available. (For a detailed listing and review of suggested library books, literary readers, and reading games consult *Recreational Reading for the Classroom,* Central Utah Reading Council, Rice House, Brigham Young University, Provo, Utah, 84601.)

Realia refers to real objects, artifacts, and other three-dimensional items which children can observe and handle. In most cases realia used in a reading center will be inanimate objects, but on occasion it may be animals or plants. Included in this vast area would

be globes, aquariums, terrariums, rocks, models, industrial or agricultural products, clothing, tools—in short, any artifact or object relating to subject or special-interest areas (science, social studies, health, etc.) that will be of interest to children. This realia should be attractively displayed, with interest-catching placards which give a small amount of information or invite further reading. Such realia and placards serve as eye-catchers which draw attention to the reading center and its contents.

Experience charts and informational charts are valuable reading materials to include in a reading center. Pamphlets and travel brochures or folders are often stimulating because of the many color pictures and small amounts of reading. Magazines and newspapers are materials of high frequency use in a center. Sets of encyclopedias, science collections, atlases, and almanacs have appeal to many children and should be easily accessible in a center. Filmstrips with viewers can provide very stimulating reading experiences for children. Likewise, available listening stations with tapes and records of interesting stories can motivate children to read the stories, either along with the recording or separately.

Setting Up a Classroom Reading Center

A classroom reading center can be arranged by the teacher alone or by the teacher and children working together. In either case, it is essential for the teacher to have clearly in mind the purpose of the particular kind of center that is to be established. He also must be acquainted with the location, space, furniture, equipment, and materials that are required and available for the desired center.

The primary dictate of location of a reading center is control of noise and movement. It should be set up on an area generally free from noise and heavy flow of traffic, yet easily accessible to the students and easily observable by the teacher. The size will be dictated by classroom size and student enrollment. Some centers may be as small as six feet by eight feet; others as large as fifteen feet by twenty feet. A comfortable size would be approximately ten feet by fifteen feet. Naturally the size will have an effect on furniture and equipment. Small centers may rely on a rug and cushions for

seating and bookshelves for partitions. Once these factors, along with the type of center and the materials needed, are determined, the center can be developed.

Perhaps the most effective classroom reading center is the combination center in which the teacher provides and prepares certain permanent aspects of the center, and then guides children as they select and prepare the specific interest part of the center. Given proper guidance and sources of materials, children often develop centers that have more appeal to other children than a center prepared by the teacher.

In order to locate and supply appropriate reading materials for the center, children must read and classify the materials. This reading and classifying not only creates interest, but also helps children develop reading skills. In addition, the enthusiasm of children is often infectious, and they inspire and motivate other children to read materials that have been placed in the center.

Use of a Reading Center

Like any other device, a reading center's potential value is not realized unless it is fully used. Maximum benefits are derived from a center when children are permitted to use it by choice during free periods of time or at other times when the teacher schedules their use of it. If it were used only during free time when his work was completed, the child needing it most would never get to use the center. For this and other reasons, some scheduled periods are necessary.

Self-directed Free Periods

The reading center materials are used most effectively when they are available to children during most of the school day. Materials might be accessible to students before the formal beginning of school each day, during the recess and noon hours, and at times during the day when children have completed assigned work.

During free choice periods the students are encouraged to browse in the center to select something of interest to read. They may then remain there to read or take the material with them to

their seats. They may choose to play a game with someone else, view a filmstrip, or listen to a tape or record. Two or three students may choose to share stories with one another, either by reading them orally or telling and discussing them. They may decide to do puzzles or writing activities in conjunction with an article in a magazine or storybook. The interesting atmosphere may stimulate some to create stories, poetry, or charts that all can share.

Scheduled Periods

Scheduled periods are provided to ensure every child's use of the center regularly and to introduce special activities. During these scheduled periods in the center the teacher provides many sharing activities and opportunities to explore new areas. A knowledge of student interests, needs, and available materials will be most helpful to a teacher here.

Possible sharing activities are innumerable. They may be discussion oriented to a particular subject, such as animals, with each child sharing a part of something he has read. They may be oral reading experiences with children sharing an exciting part of a good book. Pantomime dramatizations and radio plays are other ways of exchanging good material. Art projects, such as posters or diagrams can be used for conveying something of interest.

In addition to sharing, students should explore the materials available. This may be stimulated by effective displays of realia, interest-catching placards, or through puzzle sheets or treasure hunt sheets. The latter items supply questions that can be answered through exploring the available materials.

Conclusion

Classroom reading centers are not new, nor are they a panacea for solving reading problems. Experience, however, seems to substantiate that the establishment and proper utilization of an effective classroom reading center can be one of the most productive methods a teacher uses to develop within children a love for reading and, at the same time, provide practice in necessary reading skills.

Classroom and School Corrective and Remedial Programs

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DIAGNOSTIC TEACHING should be the main feature of any corrective or remedial program. The teacher should use every instructional situation to evaluate the child's strengths and weaknesses, and he should have an awareness of the child's previous learnings, learnings necessary for each step of instruction. For this reason, the effective teacher can be likened to a wrestler, who must know his moves and be prepared with alternate strategies when the unexpected happens. Perhaps, then, the difference between a regular classroom teacher and a corrective and remedial teacher is the latter's awareness of any available strategies if learning does not take place with the strategy selected first.

Obviously, the differences between corrective and remedial types of teachers and regular classroom teachers are less clear than are their similarities. Both should have their pupils' learning and attitudes foremost in mind. Both use alternate strategies. Both should teach diagnostically. In fact, as educational trends seem to be developing, every teacher will be a diagnostic teacher in the near future. All teachers will need training in the techniques of diagnostic teaching and in selecting alternate strategies. Children will tend to work more individually, and teachers will do less "talking" to children. Therefore, the role of information disseminator seems to be on the way out, and a new role, that of diagnostic teacher, is in.

In this paper discussion is limited to 1) the promise of diagnostic teaching, 2) questions answered by diagnostic teaching, 3) three examples of diagnostic teaching techniques, and 4) sources of help for the classroom teacher in order to initiate diagnostic teaching in his classroom.

Promising Rewards

Using diagnostic teaching techniques allows the teacher to move away from instruction based solely upon the results of tests. Testing the child for a week or two while instruction waits is not necessary in a program which features diagnostic teaching. Instead, the teacher, with a classroom of children who are ready for instruction, administers brief, informal tests designed to evaluate reading skills for initial instruction. However, by watching children's responses to initial activities and by a small amount of individual attention, the teacher finds areas in which each child works effectively as well as areas in which each seems to encounter difficulty. All students, both strong and weak, profit from the resulting adjusted instruction. Now each child can be part of an educational program in which he can have success daily. Also he can meet considerable challenge each day, with little likelihood of frustration. As the child becomes comfortable while practicing the skills he has mastered (his strengths), he develops a desire to master other skills—those in which he has demonstrated weaknesses. As his awareness of new skills grows, he grows. To this end the teacher provides opportunities, learning situations, books, and encouragement.

At once the teacher realizes that he must deviate from the basal reader. Would you prefer to say that he needs to step beyond the basal? Fine. Instead of accepting the basal as the program, the diagnostic teacher sees it as a point of departure. He quickly recognizes that the sequences developed in the basal are not appropriate for some children. He has alternate approaches or strategies. The language experience approach may be effective for several children. Extended library reading may work for others. Word attack reviews, for still others. In this way, reading lessons become diversified; teaching and learning become more fun.

The diagnostic part of diagnostic teaching is not urgent in terms of time, for the teacher has ample opportunities to draw diagnostic conclusions. While a child might not work well in certain material written at the third grade level, he may work quite well in other material written at the same level. Why? What variables might

cause such a difference? The time of day? The subject matter of the material? A preceding frustration? In formal diagnosis many such variables are impossible to judge. However, in diagnostic teaching the teacher has time to observe, make alterations, observe again, and adjust instruction. No time factor operates against the child or the teacher.

Since the child is being taught as he is being diagnosed, diagnostic teaching does not necessarily call for diagnosing causes of his disability. While it is always desirable to identify causation, it is often not possible. If he waited to find the cause of some children's problems before teaching them, the teacher would be waiting all year . . . or, worse yet, perhaps all a child's life. No, he does not wait. Instead the diagnostic teacher discovers the things a child does and does not do well and works with him in both areas. Diagnosis for causation is always going on, but it does not stop the teacher from providing worthwhile instruction at the same time.

Another advantage of diagnostic teaching is that it allows an evaluation of the patterns of a child's strengths and weaknesses. One error does not excite anyone, but consistent errors and consistent strengths lead to conclusions. One reversal does not set the stage for a program of directional orientation. One vowel substitution error does not call for a phonics program. However, as patterns of performance are observed, the teacher becomes more confident of the problem and can direct the instructional program more specifically.

Questions Answered

Diagnostic teachers will find answers to their questions about the child's strengths and weaknesses. Yet, several other important questions will be answered at the same time.

Does the child need to work alone, or can he work effectively in a group with other children? Some children not only can but need to work with others. They learn well from their peers; their peers stimulate their learning environment. Others either are distracted by or are distracting to other children. The answer to this question then gives the teacher valuable clues to the instructional environment most suited to each given child.

Does the child need to work orally, or can he work, at least part of the time, silently? Some children need constant oral reinforcement in their reading. They do not respond well to silent reading activities nor do they respond to pencil and paper activities. If the child needs oral work, obviously the teacher will need to make adjustments for him in the classroom.

Does the child need teacher direction for most of his work, or can he work independently of the teacher much of the time? The child who cannot or who does not work without teacher supervision needs to be identified. Some system to obtain aid for the teacher who has children of this type in his room needs to be developed. The latter part of this paper will deal with the problem of assistance for the teacher.

Examples of Diagnostic Teaching

The following three examples of diagnostic teaching serve to illustrate the type of programs that can be developed.

Grouping. The following table is an illustration of the type of information a third grade teacher might have concerning the children in his room after several weeks of school.
Notice that no rigid traditional grouping arrangement is useful. As the children in this table worked with word attack activities they

Word Attack Mastery

	Basal Level	*Initial Consonants*	*Final Consonants*	*Vowels*	*Consonants Blends*
1	2-1	yes	no	no	no
2	2-2	no	no	no	no
3	2-2	yes	yes	yes	no
4	2-2	yes	yes	no	no
5	3-1	yes	no	no	yes
6	3-1	no	no	no	no
7	3-1	yes	yes	yes	yes
8	3-1	yes	yes	no	yes
9	3-2	yes	no	no	no
10	3-2	yes	yes	no	no
11	4-1	yes	yes	yes	no
12	5-2	yes	yes	yes	yes

tended to show patterns of strengths and weaknesses. Child number six needs careful study concerning why he did not master any phonics skills, while children numbers seven and twelve need little help in phonics. As a result of diagnostic teaching with the resulting indications of weaknesses, flexibility in grouping is appropriate.

Syllabication. After providing some instruction in syllabication a group of nonsense words can be given: *sogtep, ikin, uton, binin, afgon, teten, atfer.* The teacher should have the students prepare two cards, one with *vc/cv* and the other with *v/cv* on it. As each word is presented, the child should hold up the appropriate card based upon the previous instruction. The teacher can tell quickly which child has faulty learning or which is in need of further instruction. Durrell has advocated instruction calling for every-pupil response as a diagnostic technique with his materials in *Speech to Print Phonics.* Can we not apply his concept to many aspects of learning?

Interests. Normally, a teacher sets up an activity, asks a child to pay attention (sometimes called motivation), and then forces him into a response situation. The diagnostic teacher is more likely to set up a group of activities to which each child has a choice for response. Suppose that in the back of the classroom the teacher has activities in which 1) two children can work together orally, 2) a child can paint the main idea of a story he has read, and 3) an individual can write creatively in reaction to teacher or child-posed questions such as Torrance's, "What would happen if it rained every Saturday?" Now each child can choose his activity. If a child chooses one activity consistently, he may be indicating a strength as well as an interest. The teacher can attempt to motivate and provide instruction in the area of other activities which the child did not choose. In this way, instruction can be geared to both strengths and weaknesses as well as to interests. Another benefit of such instructional situations is that the teacher is free to assist children who need individual attention.

Classroom Assistance

Many teachers will find diagnostic teaching a difficult and time consuming task, one almost impossible to complete without assis-

tance. Do not let such obstacles deter you. Seek help! Creative teachers have found help from many sources in recent years. Let me suggest a few.

1. *The reading specialist.* Instead of asking the reading specialist to take the child from the classroom for instruction, ask him to help you identify in your classroom strengths and weaknesses among the children. You will learn from the reading specialist, and he can learn from you.

2. *Mothers.* Some mothers are terrific as classroom aides. Use them. Let them be persons to whom children respond. Let them record language experience stories. Let them help with routine tasks to free you to work with individual children or with small groups.

3. *Other children.* Some lower grade teachers find exceptional value in using older children as instructors. Let them help young children operate tape recorders and listening stations. Let them set up painting activities. Let them serve as listeners as younger children read. For example, ask a sixth grade teacher to release three children for a half hour a day, and see how helpful they can be.

4. *Peer instruction.* Effective learners often can help ineffective ones. Let them. Team these students, and let them read to each other. Let them assist with the scoring of papers. Let them do some routine work. Children often relax and learn better from their peers than they can from their teachers.

Some general principles are involved with the use of outside help. You are in charge. You plan the lessons and direct the assistants. If personality conflicts arise, you step in and remove the obstacles; if the obstacle is the assistant, then remove him. But do not limit your program because you cannot do it all yourself.

Perhaps we can provide children who have reading difficulties with opportunities to learn to be successful in what they try. Perhaps by teaching diagnostically we can begin to see each child as a successful learner. Perhaps today we can start fulfilling the future role of the diagnostic teacher. It seems to me to be worth the effort.

The Teacher's Treatment of the Disabled Reader

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TREATMENT, whether applied by physician, therapist, or teacher is determined by diagnosis. This paper defines and discusses the nature of treatment both from an instructional and therapeutic point of view. It suggests and illustrates eight factors essential in treatment and sets forth a flexible grouping plan for meeting the reading needs of thirty, second grade children whose reading performance ranges from that of a nonreader to that of a reader at the fifth grade level. It illustrates the use of a projector in providing a visual-visual-auditory approach in the treatment of a second grade boy who is a disabled reader.

Definition of Treatment

Treatment, as applied to reading, is the act, method, and manner of helping an individual attain better adjustment by means of psychotherapeutic aid, counseling, and instruction. It is designed to remedy or mitigate the individual's disability in order to assist him in the realization of his goals. Treatment can be general, specific, palliative, or preventive in nature. It must, however, be a direct response and sequence of a diagnostic study of the individual or of an immediate anticipation of his needs.

Some Principles Essential to Treatment

Treatment, as applied by the classroom teacher, involves both instruction and therapy. Some principles underlying its application are briefly summarized.

Pay Attention to the Individual

Each child needs to be accepted as a person and at his level of development. He needs to be understood, respected, and liked. In working with the child the teacher needs to know the child's abilities, his interests, his attitudes, his goals, and the reading skills he possesses and those he does not possess. The teacher can identify early manifestations of physical, psychological, and environmental factors affecting his progress. She can stimulate his interest in reading and help him to build up his self-concept. If necessary, she can aid him in developing more wholesome attitudes toward reading, books, the library, and the school. The teacher must do more than "go through the basal text" or follow a ritualistic approach to informal reading.

Stimulate, Inform, Guide

In providing treatment the teacher can utilize a goal-oriented process which will permit her pupils to develop their reading skills as they carry on projects and activities of interest and of value to them. Young and Young (*1*) have shown how a writing program has culminated in the production of "books" containing stories written by children in their own "unique and unrevised wording and speech patterns." Such projects are the outcome of superior teaching resulting from stimulation, information, and guidance. The whole process is goal oriented and results in "feedback" and even more stimulation which can lead to additional projects and purposeful learning.

Emphasize Interpretation Rather Than Evaluation

Remediation involves treatment which is based upon diagnosis, and diagnosis is a continuous process never complete until the disability has been eliminated. The teacher must interpret the child's performance rather than merely evaluate his achievement. Tests are only tools designed to determine facts which must be explained. The teacher must constantly ask *why* does the child respond in this manner. First one explanation and then another must be investigated. Each "hunch" should be considered, and if found relevant

it can be tentatively accepted. In a further study of the problem this "hunch" may be found material or essential to an explanation of the child's disability. His reactions to instruction and therapy must be subject to continuous interpretation.

Secure Adequate Materials

Materials must be selected in terms of the goals they are designed to accomplish and not because of their availability. The perceptive teacher will ask, "What materials will best accomplish my objectives for the child? Which will be of the greatest interest to him? Are the materials appropriate to his reading level? Which will be most effective?" Materials are to be considered as tools designed to accomplish a specific goal essential to the growth of the child's ability to read. They require careful selection and continuous adjustment.

Select and Modify Instructional Procedures

No one method is adequate for teaching all children to read. Some children learn by a visual-visual approach, some by a visual-auditory, some by a visual-kinesthetic, and some by a visual-tactual approach. It is the responsibility of the teacher to discover how the child learns and then to teach him in the way he learns. Furthermore, she must select and modify instructional procedures so as to meet the reading needs of each student. The emphasis in instruction must be placed upon the skills and abilities which the student does not possess but which are essential for his *immediate* success in reading. In fact, a child with a marked reading disability should be assured of some degree of laudable achievement. A flexible grouping plan described in this paper can become an effective means of achieving this goal. Instructional procedures in all instances must be meaningful to the child and should be related to *his* goals.

Guide Step by Step

In working with the individual and with groups of children the experienced teacher has in mind the *goals* she plans to accomplish, the *materials* she expects to use in achieving these goals, and the *procedures* she will employ. She has a plan of attack, and her treat-

ment will involve a sequence of instructional activities which are dependent one upon the other. In teaching chapter reading, for example, she will show her students how to identify main ideas, how to convert major headings into questions, and how to read for answers to these questions, and then she will show her pupils how to make the new facts their own. Her instruction advances step by step.

Avoid Frustration and Emotional Set

The teacher's main task is to arouse within each child the desire to improve his reading. Motivation is essential to success in learning. The instructional period must be one in which the student can make progress. Success must be assured, for every child needs satisfaction, security, and recognition. The successful teacher will accentuate the positive and eliminate the negative. In successful treatment the individual will be given an opportunity to experience success early and continuously.

Emphasize Wholeness and Continuity of Learning to Read

The successful teacher of reading will emphasize the integration of reading skills rather than merely an accumulation of skills. She will understand that reading skills, if they are to be functional, must "go together" as hydrogen and oxygen unite to form water, H_2O. This means, of course, that basic reading skills will be utilized by the student as he accomplishes his purposes and achieves his goals. Furthermore, the teacher will understand that learning to read is a continuous process. It is a way of life and an essential aspect of purposeful living in an ever-changing world.

Treatment of Children in Groups

Miss Rose, the teacher of thirty, second grade children, has worked with her students for nearly six weeks. After determining the individual reading needs of the students, she has decided to make use of a flexible grouping plan in order to instruct them adequately. This plan makes it possible to provide boys and girls, whose reading achievement is at different grade levels, with an opportunity to carry on reading activities suited to their different and varying

needs. In flexible grouping children are brought together to achieve a purpose and remain together until their purpose has been accomplished. The groups are not permanent and in many instances may change weekly. For example, during one week Miss Rose had four groups of children. One group was composed of eight boys and girls who needed to learn how to read for detail. A second group contained twelve children who were given instruction in word attack. A third group was made up of four children who received instruction in reading for main ideas. A fourth group was composed of six children who needed instruction in how to follow printed directions. Four of these came from underprivileged homes and had little experience with written materials. They were, however, interested in making witches for Halloween, and this involved cutting, coloring, and pasting. In order to accomplish these objectives, they needed to learn how to read for the purpose of following directions.

It will be observed that the children in each of the four groups have specific objectives to accomplish. In achieving these objectives they make use of materials suitable to the purpose and to their reading levels. Furthermore, procedures vary with each group as the teacher brings her instruction to a sharp focus. This flexible grouping plan will continue for several instructional periods, and then regrouping will occur so as to achieve new objectives. This grouping plan is based upon the assumption that the instructor is cognizant of the reading needs of her children. Such a plan can easily lead to individualized instruction.

Suggestions for Using Flexible Grouping

In making use of flexible grouping, the changing needs of each child and the determination of adequate reading objectives should be given primary consideration. Materials designed to accomplish these objectives should be selected in terms of the child's purpose, interest, and reading level.

Teachers experienced in the use of flexible grouping report that at least forty-five minutes are required for reading activities. The work of the smaller groups can be started first and left for a

time with a chairman or group leader. It is frequently necessary to have the groups with which the teacher is not working carry on an activity which does not require guidance from the instructor. Time spent within a group is dependent upon objectives accomplished and the interest of the individuals making up the group. Generally, group activities extend from two to five instructional periods.

Teachers having an experiential background in grouping have found it advisable to make use of anecdotal records. Others have found it expedient to list the reading needs of each child on a 5″ x 8″ card. The teacher inexperienced in grouping should work with one group and gradually extend her instructional activities to two and, if advisable, to three or more. Teachers who have difficulty in keeping several groups functioning simultaneously may do so because of a lack of careful planning, inadequate control of children, or faulty work habits on the part of their students. Flexible grouping is not recommended for the inexperienced teacher.

Treatment of a Clinical Problem

Miss Rose reports that one of her students, Stephen, was referred to the Psycho-Educational Clinic at Western Michigan University, not only because of his reading disability, but because of its duration and the fact that she believed him to be a boy of average mental maturity. At the time of his referral he was nine years and eight months old. He has been enrolled in the public schools for four years and has made two years of progress. It is obvious that he dislikes reading and any activity related to books. A former teacher reports the possibility of mental retardation and suggests a hearing loss. Neither of these inferences has been substantiated. It is said that he loves animals and can "express himself through art."

The report of the clinical study of Stephen made by the reading clinic provides the following diagnosis. "Stephen is a boy of average intelligence who has achieved at a low level in the language arts, especially reading, primarily because of a mental set against reading which has resulted from formal instruction before he had reached a sufficient degree of readiness. Sibling rivalry can be a contributing factor."

Before examining the results of remedial treatment, let's briefly examine the clinic's recommendations.

1. Utilize a visual-visual-auditory approach.
2. Reduce sibling rivalry.
3. Do not *require* oral reading.
4. Emphasize *why* and *how* questions.
5. Have parents provide aid only when asked.
6. Stress praise and commendation.

In applying the treatment suggested by the staff of the Psycho-Educational Clinic in the remediation of Stephen's disability, the visual-visual-auditory approach was utilized. In implementing this process, a picture of a cowboy actively engaged in the roundup of steers was projected upon the chalkboard. Because of his interest in animals, this picture immediately captured Stephen's attention and that of two other boys in his class. The children were encouraged to discuss the picture, and in this manner background and mental content were built up. Objects in the picture were labeled on the chalkboard. The children were encouraged to make visual-visual-auditory associations and when the current was turned off, they were asked to identify the word symbols. If errors were made, the picture was restored. The children were taught to use the words in sentences, and later they were encouraged to dictate a story concerning the action shown in the picture. Their sentences were written by Miss Rose on the chalkboard, using as few helping words as possible. After careful planning, a title was selected for the story. Stephen and his two friends read the story as a whole, and later they read to answer questions asked by the teacher. When expedient, word study was introduced making use of structural analysis and phonics. Miss Rose emphasized phrase reading and the use in sentences of the words she had previously taught. Stephen and his associates were shown how to design and construct binders which were used to hold a reproduction of the story the children had written. Stephen, who was now an author, experienced great satisfaction in reading *his* story to his parents and to his grandparents. This visual-visual-auditory approach to reading was continued for five weeks, and during this time Stephen added over two

hundred new words to his reading vocabulary and actually developed an interest in stories and books. His parents reported that he read aloud his "books" to visitors and anyone who would listen. Frequently they said he urged that his listeners ask him questions concerning the material he had read. Evidently, in Stephen's case this goal-oriented approach paid off. It enhanced the value of instruction and provided therapy as his self-concept was actually increased. A conference between Miss Rose and the parents made possible the discussion of sibling rivalry, reading instruction in the home, and the importance of reinforcement of desired responses by means of praise and commendation. It is apparent that Miss Rose has demonstrated her ability to provide treatment following a clinical study of a disabled reader. Furthermore, she has shown a high degree of creativity in meeting the reading needs of her boys and girls.

Summary

This paper has shown how treatment in the form of instruction and therapy can be applied to a group situation and also in an individual case. Eight principles underlying remediation have been explained. Flexible grouping and the teaching of reading as a goal-oriented process have been illustrated.

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Differences in Learning Patterns of Boys and Girls

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THE TEACHING OF READING is a major concern of educators today. Statistics from many schools indicate that boys have more difficulty than girls in learning to read. In fact, large school systems report that, at the upper elementary level, the boys make up 75 to 80 percent of all reading disability. Enrollment figures from reading clinics show that boys compose over 85 percent of the students in classes for reading improvement.

Past Research

Because the poor reading achievement of many elementary school boys has been of growing concern to educators, there have been many studies designed to investigate this disparity in the reading ability of boys and girls. As early as the 1930s, Charles St. John tested approximately one thousand pupils in grades one through four and found no significant sex differences in measured intelligence. Nevertheless, he reported that girls markedly excelled boys in reading in the first four grades, and that boys showed 7 percent more nonpromotions than girls (*9*).

Wilson, Burke, and Fleming made a three-year study of the Horace Mann School in New York City. They found no differences in mental tests among boys and girls in the first grade. Yet in reading at the second grade level "the average of chances was 88 in 100 that the girls would be superior" (*11*).

During the 1940s, one of the largest research projects on sex differences in school achievement was conducted by Stroud and Lindquist with 50,000 pupils in more than 800 schools in Iowa. With the Iowa Every-Pupil Basic Skills Test, students in grades

three through eight were tested on reading comprehension, vocabulary, word-study skills, basic language skills, and arithmetic skills. The researchers stated that "girls have maintained a consistent, and on the whole, significant superiority over boys in the subjects tested, save arithmetic, where small insignificant differences favor boys" *(10)*.

In the area of beginning reading, Sister Mary Nila tested 300 first graders on a number of individual and group tests during the first weeks of school in 1952. As a result of these tests, she determined that the boys as a group and the girls as a group were equally ready to read. These children were tested at the end of the school year for reading achievement. By that time the girls significantly exceeded the boys in both reading growth and achievement *(4)*.

In the May 1961 *Elementary School Journal,* Arthur Gates published his findings about sex differences in reading ability. He analyzed the reading test scores of 6,646 boys and 6,468 girls in grades two through eight. The participants in the study were approximately typical in intelligence, scholastic aptitude, and other pertinent factors. The results showed that the scores of the girls were significantly higher than those of the boys at all grade levels. Gates felt that the poorer showing by the boys on the tests indicated an environmental rather than a hereditary explanation. Perhaps more girls than boys experienced life situations in which there were greater opportunities, incentives, and respect for reading. Because of different role conceptions in our culture, the boys may have failed to be motivated by a feeling of the importance of the reading act. Perhaps, too, they were less interested in the school routines and materials of instruction than were the girls.

In this same vein, Powell reported that boys in our society are taught to view feminine pursuits with disdain and many boys perceive reading in a similar manner. Then reading becomes inappropriate for them. "Our cultural heritage encourages boys to seek out roles which exemplify that mythical 'All-American Boy'—and that role does not emphasize reading in the idealized model" *(5)*.

In considering factors which affect success in reading, Helen M. Robinson stated that there is strong evidence, supported by research, of sex differences in reading achievement in the elementary school. She, like others, questioned the causes of this disparity in reading

ability. According to Robinson, "At present it is not clear whether just being a girl gives a child a better chance for early reading success or whether something inherent in the school situation or the social setting militates against the progress of boys" *(7)*.

Current Research

Homogeneous Sex Groupings in Beginning Reading

During 1962-1963, an investigation was made into the problem of whether the achievement of boys in beginning reading would be affected by a grouping procedure in which the groups were composed entirely of boys. Approximately 550 children in the first grades in the Los Angeles City Schools were taught reading in sex-segregated groups. The schools chosen provided a cross section of socioeconomic levels, ranging from lower-class to upper-middle class. Eight pairs of first grade classes were used. In one member of each of the eight pairs, the composition of the classes was arranged so that three-fourths of the boys were enrolled in one class with one-fourth of the girls. The alternate member of the pair contained three-fourths of the girls and the remaining one-fourth of the boys.

The reading lessons for these classes were arranged in the following way. One reading period was scheduled in the morning between 9:00 and 10:00, and one in the afternoon between 2:00 and 3:00. In four of the classes containing a majority of boys (from a total of eight classes), the teachers taught reading to groups of all boys in the morning and to mixed boy-girl groups in the afternoon. In the remaining four classes, the teachers taught reading to groups of all boys in the afternoon and to mixed boy-girl groups in the morning. This same procedure was carried out in the classes containing a majority of girls.

At the beginning of the school year, the children in the study were given the Harsch and Soberg Survey Test of Primary Reading Development, Form A. An intelligence quotient was determined for each child through the use of the Detroit Beginning Primary Test. Further, the teachers collected reading readiness data with a readiness checklist, and home and family background information with a sociological data sheet. An alternate form of the Harsch and

Soberg Test was administered in June at the end of the second semester.

With the data from these tests, an analysis of variance was done for each of the post-test scores and the total post-test with no significant "F" ratios to be found in reading achievement at the end of the first grade. The difference between the tota' post-test scores and the pretest scores (reading growth) was treated with an analysis of variance, and again no significant results were found. These statistical analyses of reading achievement and of reading growth did not show that boys taught alone gained significantly more in achievement or in growth than did the boys taught in heterogeneous sex groupings.

As a group, the girls achieved significantly more than the boys on the post-test. The mean for the girls was 55.9, and that of the boys, 49.2. This showed a significant difference of 6.7 in the reading achievement of the girls.

Moreover, the girls demonstrated significantly greater reading growth than the boys (growth being measured as the difference between the pretest and the post-test scores). The means for the girls on the pretest was 23 and for the boys 20.7, a difference of 2.3. The means on the post-test were 55.9 for the girls and 49.2 for the boys, a difference of 6.7. It appeared that during this first year of learning to read the gap between the boys and girls had widened considerably. The analysis of the data demonstrated conclusively that the girls not only achieve more by the end of the first year, but that girls actually have a greater growth in reading during this highly important first grade.

Although the main effect of the research showed that boys did not learn to read better in sex-segregated groups, the teachers readily admitted in a series of individual interviews that they had found basic areas of difference in the learning patterns of boys and girls. These differences from teacher observations in all-boy and all-girl groups were summarized in eight areas.

Personality Style

In observing boys in the research classes, teachers identified four areas of difference in the personalities of boys and girls which have implications for the teaching-learning process.

Boys were found to be more aggressive and less conforming in the school situation. This comparison of aggressive behavior of the boys versus the conforming, "nice" behavioral responses of girls was underscored by Kohlberg (*2*) who suggested that "niceness" is a very important value to school-age girls, connoting nonaggression, interpersonal conformity, restraint, and nurturance of helpfulness. Because aggression has been considered a major component of "badness" by many teachers, it was not surprising that Pauline Sears and David Feldman (*8*) in the *National Elementary Principal* reported that boys received significantly more disapproval or blame than girls. Further, teachers criticizing a boy were more likely to use a harsh or angry tone, while criticisms of girls were generally conveyed in a normal tone.

Boys appeared to have a lower frustration level for boredom than girls and were less able to attend and tolerate the monotony of regular classroom routines. When the boys were bored, they became discipline problems. In groups of all boys, teachers reported that they had to keep on their toes to make the lessons varied and exciting in order to capture and hold the imagination of the boys.

In the terminology of Riesman (*6*), teachers stated that boys tended to be more "inner-directed" than "other-directed." Boys were more concerned with learning to read to find out something they wanted to know or to do something which interested them. Girls, on the other hand, were desirous of learning to read to please the teacher, their parents, other relatives, or friends.

The fourth area of observed personality difference was that of the ability to adapt easily and quickly to new situations. Teachers referred to this behavior as part of an "adaptive syndrome." They discovered that boys demonstrated more difficulty than girls in coping with changes in the learning process and adapting to new stimuli. Girls adjusted with greater ease, speed, and flexibility to a great variety of new situations. Teachers hypothesized that because of this difference, boys might prefer stories in a series with the security that comes from characters that are known and enjoyed.

Activity Levels

The teachers, when describing their teaching in groups of all boys, made a number of statements depicting the activity levels of

the groups. "Boys are so overwhelmingly active, so frighteningly energetic, so tremendously vigorous, so utterly strenuous, so terribly physical." "It's so hard for a six-year-old boy to keep himself occupied with reading a book." "Boys tend to wiggle, twist, push, turn, shove, and in general bother each other instead of reading." "Boys are more 'twitchy' than girls." "Girls are so quiet and controlled—they can sit quietly and read a book." "Girls are easier to teach—so ladylike and easy to handle." The differences in the activity levels and behavior patterns of six-year-old boys and girls were very evident to the teachers in the study. Teachers found that boys needed much behavioral involvement in learning and many specific physical responses in an active learning environment.

Verbal Facility

The teachers in the all-boy groups were amazed to find out that boys verbalized so poorly, speaking in incomplete and fragmentary sentences. The boys were not as fluent as the girls; they had more difficulty in speaking clearly and easily. The teachers reported that having the girls present in the class had given them the erroneous impression that the boys were speaking and participating as much as the girls.

Auditory Discrimination

The boys' inadequacies in articulation, enunciation, and pronunciation led to greater learning difficulties in phonetic analysis skills. Teachers reported that the boys had much more trouble than the girls in making auditory discriminations and hearing common phonetic elements. Many times it would take the boys eight or ten lessons to learn and recognize sounds that the girls could identify in three.

Listening Skills

In this area, the teachers declared that the boys were not as good "listeners" as girls. Boys appeared not to listen as intently and carefully as girls. This might perhaps be related to the greater difficulty the boys evidenced in hearing all the sounds and in making fine discriminations. All of the teachers stated that the boys listened more effectively when they were keenly interested. They also tended to

listen more intently when the teacher utilized more than one of the five senses.

Attention Span

The attention span of boys, in general, was found by the teachers to be shorter than that of the girls. The majority of the teachers expressed the viewpoint that the attention span of the boys varied between 12 and 15 minutes, while the girls could attend for 20 to 25 minutes. However, several teachers qualified this viewpoint by indicating that it depended on the activity. "Boys can pay attention for a long time if they're doing something active and dynamic, either mental or physical."

Goals and Motivations

The teachers in the research stated that the girls were easier to teach than the boys because the girls were eager to please the teacher, their parents, or some other adult figure. They were more quickly motivated by praise to work hard and do their best at a given task. Some of the teachers said that the boys could be more enthusiastic, more curious, and more tenacious than the girls in trying to solve a problem or learn something in which they were interested. Generally, the boys in the study were less anxious to please the teacher, less motivated to develop good work habits, less desirous of assuming responsibility, and less self-motivated in learning to read. Perhaps, as suggested by Gates in a study mentioned previously, the role concept of the boy in the culture has had less goal-direction for the reading act than for the girl and more motivation for physical involvement and activity.

In the area of attitudes and goals of boys about school, Patricia Minuchin—after working in a project at the Bank Street College of Education—declared that "boys were more resistant and negative about school and education, less concerned about achievement. Girls were more concerned with achievement and recognition, more positively identified with school, more apt to find the entire experience of school life comfortable, pleasant, and meaningful (*3*)."

Interests

The teachers of the all-boy groups contended that they found it difficult to interest boys in subject matter that did not have the

appeal of the unusual and the dynamic. The instructor had to be really on his toes to utilize the boys' demands for action and excitement. Teachers of the all-girl groups reported the ease with which they could hold the interest of girls in a variety of subjects. This view has been supported by the interest studies of Lazar, Terman and Lima, Rankin, Thorndike, Norvell, and Stanchfield. These studies have shown that boys have special interests and do not like the so-called "girlish" books, but that the girls not only like their own special books, but also all of the so-called "boys' " books.

Continuing Experimentations

Materials of Instruction

The second year of the study, designed to analyze the factors which affect boys' achievement in beginning reading, covered the school year 1963-1964. This research was concerned with materials of instruction used to teach beginning reading, e.g. preprimers, primers, and first grade readers. Materials especially written to capture boys' interest and attention were used with the experimental groups of boys and girls to note the effect on boys' reading achievement. The eight teachers in the experimental groups used a series of readers about an atomic submarine and the exciting adventures of a sailor named Jack, his pet parrot, Bluebell, and his friend, Eddy, a little boy of six. The control groups used the basal series adopted as state texts in California.

The design for the research project was similar to the one described for the preceding year. To lessen the bias of the teacher factor, each teacher taught an experimental and a control group. This necessitated two reading periods a day, one in the morning between 9:00 and 10:00, and one in the afternoon between 2:00 and 3:00. To decrease the bias of the time factor, one-half of the experimental groups and one-half of the control groups were taught in the morning periods; and the remaining halves of the groups were instructed in reading in the afternoon.

As in the research project in the preceding year, the children in the study were given the Harsch and Soberg Survey Test of Primary Reading Development in September. The Detroit Beginning Pri-

mary Test was used to determine an IQ score for each child. The teachers also collected reading readiness data and sociological background information. An alternate form of Harsch and Soberg Test was given in June at the end of the school year to ascertain the reading achievement of the children and the reading growth, the difference between the pretest and the post-test.

The statistical analysis of the data revealed that the boys in the experimental group achieved more in reading than the boys in the control groups, but not significantly so. The mean for the experimental boys was 57.0 and the mean for the control boys was 54.6. The second analysis showed identical results with the growth scores. The mean for the experimental boys was 28.9; and for the control boys 21.5. The means were again in the expected direction but not significant.

Individual interviews with the teachers in the research project indicated that the teachers enjoyed using the experimental readers which proved to be of high interest to boys, but that they considered them too difficult for beginning reading because of the rapid introduction of new words and the lack of sufficient repetition of the words. (The preprimers, primers, and first grade readers had been specifically written for remedial instruction in the middle grades.) The teachers reported that they needed a variety of reading materials to supplement the boy-interest-oriented series and give added practice and reinforcement to the printed word. As a result of the teachers' suggestions, a workshop was conducted in the summer of 1964 to develop specific instructional materials for the third year of the research—1964-1965.

Continuing Research

Use of a Variety of Materials of Instruction

During the third year, 1964-1965, researchers continued to analyze the factors which affect boys' achievement in beginning reading. The study involved eight elementary schools, fourteen teachers, and approximately 500 children in the Los Angeles City Schools. As in the two previous years, these schools covered a broad range of socioeconomic levels from high middle-class to lower-class populations. The teachers continued to use a series of readers about an

atomic submarine called the Shark and the exciting adventures of a sailor named Jack. In addition to the regular reading books, a variety of materials developed in the summer workshop in 1964 were added to the instructional program. These materials include a number of items:

1. *Prereading instructional aids* to develop speaking and listening skills, such as flannel board stories and puppets to develop specific speech sounds.
2. *Individual flannel boards and blackboards* with appropriate follow-up material to involve children in active participation in speech and listening situations and to develop alphabetic sound-symbol correspondences.
3. *Daily follow-up practice material,* which the children use independently, to emphasize and give practice in the reading skills taught in the directed reading lesson with the readers.
4. *Listening tapes* for each story in the reading books with appropriate follow-up practice material, to give opportunity for rereading the stories in the reader as an independent activity and to develop skill in listening and following directions.
5. *Colored slides* with picture and context used by the teacher in a directed reading lesson or independently by the children, to give practice in the basic words in different stories and to vary the stimulus of the printed word.
6. *Study prints,* paralleling activities in the readers, to enable the teacher to develop the vocabulary of the readers in an auditory situation and to provide incentives for children to dictate their own stories in a reading-through-writing approach.
7. *Short stories and "rewrites,"* using the basic vocabulary of the readers in new situations, to allow the child to read and illustrate.

Results of Further Research

During 1965-1967, the writer, in cooperation with teachers and principals in the public schools, developed a set of basal readers, grades one through three, with teacher's manuals, and tested them

in the Los Angeles City Schools with significant results. In every case—whether compared by ethnic grouping or by sex—the experimental groups using the new readers achieved more than the control groups using the state texts. The means for the experimental group were 48.89 and for the control 43.37. The boys (as well as the girls) in the experimental group scored higher than either boys or girls of the control group.

These readers contain stories geared to the interests of boys. The stories begin with the fiftieth state, Hawaii, and proceed to Alaska, the forty-ninth state. The books for grades two and three contain adventures in our national parks and monuments and give children a picture of the variety of terrain, geological formations, and wild life from the West Coast through the Mid-West to the East Coast.

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Clinical Remediation and Diagnosis in the Elementary School: A Research View of Status and Needs

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TODAY we read much about the operation and services of the elementary school reading clinic, but few educators question either the functioning or need for such facilities. To check on the need for school based reading clinics and to gather data that would suggest appropriate operating procedures, a questionnaire survey of teachers was made. While these data were being collected and tabulated, a study of one already existing elementary school reading clinic was made. Both efforts provide information yielding questions and implications relevant to the planning of future programs.

To discover what teachers felt an elementary school reading clinic should do, a survey of teachers' opinions was conducted. The participants in the survey were classroom teachers for grades one thru seven in schools located in six north Georgia counties. A total of 302 questionnaires were returned with 167 coming from urban schools and 135 from rural schools.

The questionnaire items dealt with three aspects:

1. Sample description,
2. Opinions on the functions of an elementary school reading clinic, and
3. Opinions on other possible solutions to handling reading problems.

Those questions aimed at describing the classroom settings of the teachers surveyed elicited the following information.

Most teachers in the sample (273 of 302) teach grades one thru

six and there is little difference between the number of teachers at each grade level (range = 38 to 52).

One hundred seventy-eight of the respondents report working in a school system which operates an elementary school reading clinic, 119 say their school systems do not operate such a facility, and five do not appear to know. One interesting note is provided by the five schools in which teachers disagree over whether their school operates such a facility.

The mean classroom enrollment reported was 28.9 pupils, with a range from 16 to 42 pupils per classroom.

When asked how many students in their present classrooms exhibit reading difficulties about which they feel a need for more information, the teachers indicated need for such information on anywhere from 1 to 24 students for a mean number of 7.5 pupils per classroom. This figures out to more than 25 percent of the students in an average classroom of 29 pupils.

When asked a different question concerning incidence of reading problems in their classrooms, these same teachers reported an average of 2.9 students per classroom who do not appropriately fit into any of their groups for teaching reading skills.

When asked how many children they have referred to existing clinics, 193 teachers confessed to having referred no children during the past year. Eighty-seven teachers, less than one-third, reported having referred from one to four students.

When questioned on the possible benefit of a clinic facility to the students of their school, 276 reported feeling that it would be beneficial, four indicated that they thought it would not be of benefit, and 22 were not willing to commit themselves.

In summarizing the findings of the questionnaire in the area of sample description, we can picture the average respondent as a teacher of grades one thru six who has about 29 pupils in his classroom, 7.5 of whom exhibit reading problems about which the teacher feels a need for more information. Besides these conditions, this composite teacher claims to have about three pupils who fit into none of his existing reading groups; but, at the same time that he claims a reading clinic would benefit the students in his school,

he is most likely not to have referred a single child to any of the existing clinical facilities during the past year.

From the data we can say that, at least in north Georgia, teachers indicate that there is a need for the extra classroom aid an elementary school reading clinic might provide and that teachers for the most part feel such a facility would benefit their students. One problem is the very limited number of referrals teachers make to already existing diagnostic facilities. This leads us to question if teachers would actually take full advantage of clinic facilities if they were made available within their schools.

The next category concerns the opinions of these same teachers on the functioning of an elementary school reading clinic. Three of the questions in this category requested the respondents to make a preference concerning operating procedures of such a facility. Having children removed from the classroom for tutoring by a reading teacher was the choice of 197 teachers, while only 90 teachers preferred having a reading teacher aid them in setting up programs for students within their classrooms. Five resisted making a choice.

In response to an item asking for their opinion on the most beneficial location of a clinical facility, 265 preferred separate units in each school while 27 favored having a district or countywide facility into which students are bussed for diagnostic and remedial work.

When invited to indicate the lowest grade level at which they felt a reading clinic should accept referrals, there was general agreement on the need for beginning such help during the primary grades. One hundred and ten recommended first grade as the lowest referral level, 99 advised starting at the second grade level, 48 chose the third grade level, and only 8 were in favor of waiting until grade four or higher before making help available.

When asked which type of cases should receive preference in acceptance of referrals, 105 ranked slow learners highest, 102 placed bright underachievers in first position, 85 felt that no special category should receive preference, and only 6 felt that discipline problems should receive priority.

An unstructured question asking the teachers to list what they

thought should be the principle functions of an elementary school reading clinic elicited only three general types of responses. The most common function mentioned (236 times) was that the clinic should teach students. The second most common reply (139 times) was that the clinic should diagnose students. The third most indicated response (105 times) was the suggestion that a principle clinic function should be the instruction of teachers.

From the responses in the area of clinic functioning we can generalize that nearly two-thirds of the teachers prefer having children removed from their classroom for remedial attention, but nearly all feel that these students should only have to be removed to a clinical center located within their own school building. In the area of who should be referred, the teachers recommend early referral, at least by grade three, and they recommend that slow learners be given only a slight preference over bright underachievers in referral acceptance. In addition to these preferences the teachers demonstrate a rather solid consensus in setting forth only three principle functions of the reading clinic. These functions in order of their incidence of mention are

1. Teach remedial students,
2. Diagnose students, and
3. Instruct teachers.

To secure some further indication of how essential the existence of a reading clinic was in the minds of these teachers, they were asked to react to some items concerning other possible solutions to reading problems. The first question of this type asked the teachers to indicate their willingness to enter into a special program aimed at training them to work in an elementary clinic setting. One hundred and seventy-one said they would be interested in applying, 115 said they would not be interested, and 6 failed to respond.

The second alternative solution offered was that of inservice training for teachers. When asked which they felt would be the best investment for their school district, 230 chose the establishment of an elementary school reading clinic, while only 63 indicated a preference for the inservice teacher education approach.

Perhaps the real answer to all of the questions was found in

the last item. Here the teachers were asked, "If your class size was reduced to about 20 pupils, do you feel that *you* possess the skills necessary for teaching the few students (one to five) you would find in a normal classroom, who perform from one to four years below expected reading level?" Two hundred and thirty-seven of the classroom teachers answered this positively, and only 53 gave a negative reply. From this, one would have to gather that most teachers feel that time is the *only* barrier between them and adequate instruction tailored to the needs of each individual pupil in their classrooms.

To summarize this group of responses, we can make the generalization that, while well over half of the teachers polled would apply for special training as a remedial specialist, nearly all of them would rather have the students taken care of in a reading clinic than to be given on-the-job training oriented to providing teachers with the skills necessary to take care of these same students within their classrooms. Besides this contradiction, these same teachers nearly unanimously agree that if they were given a class size of 20 students, regardless of the variation of student skills within the class, there would be no need for *any* type of special remedial services. While the confidence in their own abilities expressed by these teachers is impressive, one must question if the teachers really mean what they say or were just blinded into responding positively by the mention of that magic number of 20 students per classroom.

The second aspect of the study, that of determining what was (and could be) done by an actual elementary school reading clinic, was achieved by finding a clinic which served about the same number of classrooms reported on in the teacher survey. This condition was set so that comparisons might be made between the ability of a clinic to provide services and the services desired by teachers. The school district and reading center serving Clarke County, Georgia, met the requirements.

The Clarke County School District serves 210 elementary teachers of grades one thru seven in the Athens area and combines both urban and suburban school settings. The Clarke County Reading Center was one of the first public school-based clinics to be set up in the state of Georgia. In addition to being similar in number of

teachers served and type of locale covered, this center has developed procedures for serving all three of the areas of need reported by those teachers surveyed. The center's functions include diagnosis of students, remedial teaching of students, and instruction of teachers.

The Clarke County Center, located near a university, has a well trained staff consisting of a full time director, Eleanor Todd, whose advanced training is in the area of reading instruction; a full time secretary; and nine trained reading specialists. These nine specialists divide their time between two types of activities. Three devote full time to the diagnosis and teaching of children and instruction of teachers in the clinic center; four serve as satellite teachers operating in two schools each where they function as resource persons for teachers, tutors for children, and coordinators of the school special reading programs; and two divide their time between these two types of activities. To ascertain the potential of this staff, their total weekly time schedule was converted into types of activities and then evaluated to determine actual accomplishment in each area.

It was found that the director really could not be counted as a part of the child service portion of the clinic operation since her time was nearly totally consumed with administrative and other non-clinic types of activities. However, she leads weekly staff meetings and study sessions, personally transmits the reports of the two children diagnosed each week to the home school, confers with principals and teachers on the cases, reads and edits all diagnostic reports, and copes with the daily emergencies which consume so much of any administrator's time.

After ruling out the director we are left with 3 and 3/5 staff persons or a total of 168 staff hours per week to accomplish the testing, tutoring, and teacher instruction responsibilities of the clinic center. Each staff member is fully scheduled and must do much of the reporting and preparation activity on his own time. Even with this limited staff the clinic serves the school district in several ways:

1. Diagnoses and prepares complete case analyses and recommendations for approximately 100 children per school year;

2. Tutors on an individual or small group basis (the largest being four students) and prepares progress reports twice during the school year for 80 remedial students;
3. Provides four days of teacher inservice education through observation, participation, and instruction at the reading clinic for about 40 teachers each school year, and
4. Honors additional special requests for individual testing within the schools whenever staff time can be scheduled.

Besides the clinic activities the satellite teachers serve all 220 classroom teachers in the eleven schools for which the center has responsibility. These satellite teachers also report having worked in group or individual teaching situations with 260 students.

In drawing together the information on the Clarke County Reading Center operation, we can first conclude that the center is unusually well staffed with qualified personnel. This large and well trained staff is able to serve 220 teachers, diagnose 100 children, tutor 80 remedial readers, give intensive inservice instruction to 40 teachers, and perform various incidental tasks during each school year.

Now that we have an idea of what teachers demand of a reading clinic and what one well organized and well staffed clinic operation is able to accomplish, let us look at how the two compare (see Table 1). If we figure that each of our 220 Clarke County teachers have, as the teachers surveyed reported, about three pupils who do not fit in any of their reading groups, this would mean that 660 students should receive remedial tutoring each year. However, through both the clinic tutoring and the limited student work of the satellite teachers, only 340 pupils received attention during the year. If we take the teachers' indication of how many students they have about

TABLE 1

Comparison of Actual and Teacher Desired Clinic Data

	Survey	*Clarke*
Remedial Tutoring	660	340
Clinic Diagnosis	1,650	100
Teacher Instruction	60%	20%

whom they feel a need for further information and similarly extend it, we come up with 1,650 pupils for whom a clinical diagnosis would be useful. The Clarke clinic was only able to do such a workup on 100 pupils during the year. In the area of teacher instruction, another need reported, the Clarke center was only able to serve about 20 percent of the teachers for whom it was responsible in an intensive program, while 35 percent of those teachers sampled indicated that this was a vital area of clinic responsibility, and over 60 percent of the sample indicated interest in such training for themselves. These facts lead to the conclusion that the Clarke center, regardless of the competence and unusually large number of staff members, can offer only three areas of necessary clinic functioning:

1. One-sixteenth of the needed diagnostic service,
2. One-eighth of the needed tutorial service, and
3. One-third of the desired inservice teacher instruction.

Where does this rather dismal picture leave us? If an unusually large and well staffed reading center is not able to come any closer to satisfying teacher perceived needs than this, what *is* the answer? This writer believes the major portion of the answer is in one element of the Clarke center's operation, that of the satellite teacher program. In viewing the operation administratively we must admit that this portion of the program does achieve a significantly larger amount of teacher and student contact than the reading clinic. Admittedly, this contact is less intensive and less individualized, but it is more available and more obvious to teachers, students, and parents alike. Another factor supporting a satellite teacher type of operation is the amount of staff required. By increasing the satellite staff almost fourfold, or to a total of 22 members, we could expand this type of service to two persons per school and yet add only 17 staff persons. However, if we were to increase the reading clinic facilities to where it alone could work with as many students and teachers, a staff of at least 60 persons would be required, thus necessitating the addition of 55 highly trained staff members. Since finding that many trained clinicians would be impossible and expensive, we must seek a solution in expanding the satellite program screen-

ing so that only the most needy cases are referred to the clinic for study.

As an example of how this author would enlarge and revise such a special or clinical type reading program, the concluding paragraphs outline a program for a 220 teacher, 7,000 pupil elementary school district, such as that served by the Clarke County Reading Center.

A total staff of about 30 persons would be required to serve such an eleven-school district. The staff would include a reading program director, 5 clinicians, 22 satellite teachers, a materials center specialist, and a delivery man. The director would coordinate the entire program and be based in a center housing the clinic, materials center, and program offices. Each school would have two satellite teachers who would function primarily as teacher resource persons, tutoring children only for short periods of time and usually within the setting of the child's own classroom. These persons would also be referral agents, able to send about five children per year to the clinic for special in-depth evaluation. Most diagnostic work would be done through group and brief informal methods by a satellite teacher within the school setting. Only those children for whom he is unable to formulate even tentative diagnoses and recommendations would be referred to the reading clinic.

There would be three major activities of the satellite teacher:

1. Complete group testing of all children for whom he is responsible (which would be about 10 classes or 300 pupils), and helping teachers in planning, grouping, and in choosing materials;
2. Complete brief individual testing of children with more extensive problems and either referral or aid in establishing appropriate in-class corrective programs; and
3. Serve as advisor, coordinator of material center services, and instructor for each of the teachers assigned to his team.

This satellite approach has many reasons other than administrative or economic concerns for being preferred to extra classroom, clinic type facilities. A great deal of time is usually lost in transporting children to the clinic center. Children coming to the Clarke

center for remedial sessions of one hour lose about two hours of in-class time. Besides this difficulty, we must consider the possible negative effects of isolating a child from his class peer group and then the difficulty of his keeping oriented with this group while spending large amounts of time out of the classroom. Some children cannot psychologically handle the labeling and specialness which often accompany extra classroom remedial instruction. Another important aspect is the extreme difficulty of coordinating in-class and extra classroom instruction; this frequently leads to noninclusion in regular class activities.

Moving from concern for the child's educational benefit and psychological welfare to teacher benefit, we also find advantages to keeping children in the classroom and providing resource help. Setting up a special reading program within a child's classroom setting exposes his teacher to new procedures. This type of exposure provides in-the-classroom inservice training and expands the teacher's knowledge and ability to cope with the problems of children in future classes. Thus, in addition to solving the problem of one child, the groundwork is laid for the solution of similar problems in future student generations. Thus, we are getting closer to the actual goal of special or individualized programing; that of preventing rather than remediating reading difficulties.

Let us turn briefly from the operation and merits of the satellite program to the revised functioning of the reading clinic. With the satellite teachers screening children, only those most in need of special attention and those beyond the scope of in-classroom help would be referred. Thus, a staff of five clinicians could easily handle the task of diagnosing 100 children per year, tutoring 70 severe remedial cases, and providing extensive training for 20 teachers each year. Teacher training would be aimed solely at acquiring adequately trained staff replacements. Since teacher training programs are not able to produce an adequate supply of trained personnel, the school must assume the responsibility for much of this training in order to keep its program operating.

Through a questionnaire survey, it has been shown that teachers do feel a need for help with student reading difficulties, but that possibly they are not really sure what type of help this should be.

Their first reaction is to pass on the problem, or rather remove the student from their classroom. This is economically impossible, as shown by the study of the Clarke center, and probably not the most advantageous approach for all concerned. Thus, the author recommends increased support of the classroom teacher in the form of personnel trained to help *him* diagnose reading difficulties, set up corrective programs within the classroom, and operate them as a part of the regular reading program. This would benefit the student, expand the knowledge of the teacher, and produce a corps of teachers sufficiently trained so that tomorrow's educational focus *can* be on preventive rather than corrective needs.

Corrective and Remedial Reading and the Role of the Special Reading Teacher

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LET US BEGIN by discussing what we mean by the terms *corrective reading* and *remedial reading*. By way of example, assume that we have a youngster who is underachieving in reading. By underachievement we do not necessarily mean a youngster who is not reading up to grade level, but a youngster whose intellectual capacity is greater than his actual reading achievement. If he is helped by his classroom teacher to come up to his level of capacity, this, then, is corrective reading. That is, the child is helped in the classroom by his regular teacher using various strategies, and he does not go to a special reading teacher for additional help.

If, on the other hand, this pupil, in addition to his ongoing, regular reading program, goes outside the classroom to a special reading teacher for additional help, we have what is termed *remedial reading*.

It might be well at this time to stress an important point. When the youngster goes out of his regular class to the special reading teacher for remedial reading, he should not be coming out at the time when the regular class reading program is going on. That is, a child should not come out of reading to go to reading. The remedial reading program is in addition to, not in place of, the regular developmental reading program.

Many parents, administrators, and even teachers, object to this. Their comments usually run something like this, "He's so far behind now; we don't want him missing his social studies," or "his science," or whatever. However, the point is, if he doesn't get this additional reading help he may miss out on everything altogether. In the case of any disability, priorities must be set, and in the case of a reading disability, reading help must be the top priority.

If a youngster requires additional reading help, something must be set aside to provide the time for the child to get that help. If something must be sacrificed to provide for the additional time, the question is, "What?" In almost every case the "what" must be a decision based on the individual. However, there are several principles to help guide us in making that decision.

First, the youngster should not come out of mathematics to go for additional reading help. Like reading, mathematics is not a subject—it is a skill. Skills have a definitive scope and sequence to aid in their development. The youngster who misses any level of this scope and sequence is handicapped in his attainment of the next level. Generally, this is not the case in the subject matter (content) areas such as history or social studies. One does not have to approach the study of history from the beginning of time and proceed up to the present.

Second, the youngster should not come out of something he is particularly fond of, or out of something which may be the only thing in which he can excel or attain some recognition—such as physical education. If one takes the attitude, "Well, I don't care how much he likes physical education, this is when he goes to remedial reading because he can't afford to miss the 'important' subjects," the child may then feel that he is being punished for his lack of reading achievement and develop a deep resentment for remedial reading and his special reading teacher. If this happens, remedial reading will do him little good.

So far, we have mentioned the special reading teacher only in connection with the remedial reading program. In many schools the special reading teacher's job is confined to remedial instruction only. He is generally characterized as a special teacher who sees groups of youngsters from the first period in the morning to the last period in the afternoon. This characterization, or role, is one that the schools can no longer afford to tolerate. This role for a special reading teacher is obsolete.

Today's special reading teacher must be a trained specialist. He must be the reading leader in his school. He is not merely the person to whom teachers send children with reading problems, or those that they want out of the room for an hour or so in order to

work with other children. We are aware that many children are "dumped" into remedial reading for problems other than reading problems. When this happens, these children are not helped and the rest of the program suffers as well.

When we view the special reading teacher as the reading leader for the school, we afford that person the latitude to work with classroom teachers to aid in the development of their corrective, as well as their developmental, reading programs. We should not find today's special reading teacher relegated to a room while he awaits the next group of youngsters. Instead, we should see the special reading teacher consulting with classroom teachers, demonstrating new techniques, concerning himself with notions of a preventive-type program, evaluating materials, and working with youngsters in a remedial program.

For years the special reading teacher has been a qualified classroom teacher who lacked any special training in the area of reading. These people generally have had no training in diagnosis, remediation, or special techniques beyond a basic survey course in reading. Many times, a person became the remedial reading teacher simply because he wanted to or because he was asked to by his principal. State law did not provide for the certification of special reading teachers.

At last we are beginning to see a change. States are beginning to adopt certification laws for special reading teachers. Kansas and Missouri are two cases in point at this writing. Our colleges and universities are developing graduate level programs to prepare special reading teachers.

Even with these progressive steps, however, we are still running into difficulty. Many times a school district will hire a special reading teacher and then neutralize his effectiveness by having him spend one day a week in each of four or five schools. If the school district is only able to hire one special reading teacher it would be a much better idea to assign him to one school. The idea would be to have the special reading teacher develop a model program in that school. It would not take the community long to realize that there was a need to have such a program in each school in the district.

If the special reading teacher must spread himself thin trying to

cover four or five schools, the program will soon be scrapped and any future attempts to reinstate a remedial reading program will meet with opposition.

Many remedial programs fail because, at their inception, they contain the seeds of their own destruction. If these programs are to succeed, they must be set up on a realistic and logical basis. The key to their success rests with defining the role of the special reading teacher. The role the special reading teacher must take is that of the reading leader in his particular school. He must not be merely a teacher who does nothing more than try to work with the children who are arbitrarily assigned to him.

One of the shortcomings in many remedial reading programs is a lack of diagnostic testing of individual youngsters. Often the special reading teacher will find youngsters in the same group who have word recognition problems, comprehension problems, or both, as well as attitude problems, emotional problems, and neurological problems. The net effect is that one will find a wider range of reading ability and problems in one of these groups than is likely to be found in the average classroom. When this situation occurs, the effectiveness of the special reading teacher is greatly diminished.

A program is needed which identifies those youngsters who need remedial help, followed by some individual diagnostic testing by the special reading teacher to determine just what the dimensions of the reading problem are. Many times a youngster is simply placed in a remedial reading group because his group reading achievement test shows him to be reading somewhere below grade level. Simply stated, an achievement test, by definition, is not diagnostic. It will not tell the teacher anything much about how this child attacks words or how he responds to questions. Diagnostic tests, such as an informal reading inventory, must be administered individually to each child to determine just what kind of help a youngster may require. The achievement test may tell that the child needs help with his reading but it will not, in most cases, tell what kind of help and how much is required.

If on the first day of school the special reading teacher has his reading groups all ready to start their remedial program, he has no time to do any diagnostic evaluations. This prestructured type of

program has already "locked in" the special reading teacher to particular groups of children without determining whether they really belong there or not.

If, on the other hand, the special reading teacher has the latitude to make some professional judgments about which youngsters go to remedial reading and when, he will have enhanced his effectiveness.

Inherent in this notion is the assumption that not all children with reading problems will be in a remedial reading program at the same time. If this is the case, then priorities will have to be set. The question then arises as to which youngsters will get the highest priorities and which get the lowest priorities. This question can only be answered when the special reading teacher has done some diagnostic testing of each child considered for the program. It is only through individual diagnosis that the special reading teacher will be able to classify the extent to which a particular youngster is disabled in reading along a continuum from "mild" to "severe" in terms of that reading disability.

Those youngsters whom the special reading teacher designates as *mild* in terms of their reading disability should, in most situations, receive the highest priority. By mild we would mean that this type of youngster has a slight problem with his word attack skills or his comprehension skills, and this mild problem is not compounded by emotional or neurological complications. This is the youngster who is anywhere from six months to a year or so below his capacity level.

This type of mild disability case receives the highest priority because these youngsters can be grouped according to similar problems—usually either word recognition problems or comprehension problems. Secondly, these youngsters will not need to be in a remedial program for the entire school year. Usually, these children can be out of the remedial program in ten to sixteen weeks. The group size for these youngsters can be larger than that of the more severely disabled, many of whom will often require individual assistance. Hence, more youngsters are helped more quickly and, when help is given, they do not stagnate unaided until they develop more severe problems.

When we unshackle the special reading teacher from a routine where he must see a group of youngsters every period of every school day, we will enable him to assume his role of reading leader in the school. For, in addition to his remedial reading responsibilities, he will have the time to work with the regular classroom teachers and the ongoing, developmental reading program, thereby preventing many reading problems before they actually begin. In short, as special reading teachers, we really want to put ourselves out of the remedial reading business where we wait for youngsters to develop problems and, instead, put ourselves into the business of prevention.

If we can land men on the moon it is difficult to understand why we cannot achieve a new role for the special reading teacher and a new direction for our reading programs.

A Nonpublic School Reading Program

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THE READING PROGRAM for the day sessions of the nonpublic schools, under the auspices of the New York City Board of Education, is a corrective reading program.

This program is geared to correcting reading disabilities of disadvantaged children in nonpublic schools. Like all Title I projects it adheres to specific guidelines (*1*).

> Present guidelines and criteria of ESEA Title I require that funds must be used for direct services to educationally deprived children who are poor. They may not be used as general aid to all schools.

The above is interpreted to mean that the reading project is of *direct* reading help (remedial) to the children and may not be involved in the school's overall reading program.

The nonpublic schools are denominational in character, i.e., church schools, since these are the only nonpublic institutions operating in the poverty areas. Lines within which these areas fall are very strictly drawn, and each year the Poverty Council reviews the situation, clearly spells out the poverty areas, and sets up criteria. Schools in these areas must meet these criteria in order to qualify for Title I aid.

Each year the New York City Public School Board of Education and representatives of the nonpublic schools meet to confer on needs and plans for the coming year. These are written into the project proposal by the reading coordinator and sent on for approval to the state authorities. Once the proposal is approved, no detail in it may be changed without filing a modification proposal.

Since 1965, the Title I project under ESEA has been a corrective reading services program. This program, under the direction of the New York City Board of Education Corrective Reading Coordinator, involves schools, children, teachers, and materials.

Schools

Liaison personnel for each denomination submit lists of schools which are in poverty areas and which, after screening by the Title I Director's office, qualify for in-school corrective reading service. In 1968-1969, 157 schools received service. Of these, 118 were Catholic Schools, 20 were Hebrew, and 13 were Lutheran, Greek Orthodox, and Episcopalian. Each school received service according to the number of children who met the criteria for admittance to the corrective reading program. This service ranged from half a day a week to more than five days a week for some schools. Each school was required to provide a suitable space in which to carry out the program and to make available the children to be serviced.

Children

From each nonpublic school's total grade enrollment, a project register is calculated based on 15 percent of the grade enrollment. In 1968-1969, a total of 13,258 children were involved. The number of teachers needed to service the program was based on this figure. Comparability with corrective reading services rendered in the city's public schools determined that one teaching position (5 days) be allocated for every 157 children. This means that for every 100 children serviced, 57 more were on a waiting list to be used as replacements for children leaving the corrective reading program *(2)*. The children came from grade two through grade eight in the nonpublic elementary schools; several high schools received services, bringing the grade range up through grade twelve.

Children were programed for instruction in groups of 10. Each group received corrective reading instruction for one hour twice a week unless the school received only one day or less service per week. In this case, the children attended one corrective reading session per week in groups of 5.

Teachers

The corrective reading program in the NPS is carried out by two groups of New York City licensed personnel—substitutes who teach

regularly on a part-time basis and permanently assigned and appointed teachers. New York City public school staffs are not tapped for this project. All teachers are recruited by the project coordinator.

Part-Time Teachers

In 1968-1969, 78 part-time teachers were employed. These were retired CRT's, retired experienced classroom teachers, and teachers on leave from public schools. All held substitute licenses. Some served one day a week and others two, three, or four days a week on a regular basis.

Regularly Assigned and Appointed Teachers

Of the annually assigned, 19 held a substitute license and 21 were appointed teachers possessing a Common Branches license. In the case of a high school assignment, a high school teaching license was required.

During the summer of 1966, 2,000 college graduates were part of an intensive teacher training project in the City University. Of these, 100 were assigned to the corrective reading nonpublic school program in September 1966. All were men and women with no classroom teaching experience. They were eager, very intelligent, and exceptionally dedicated. The reading coordinator with the aid of consultants conducted an initial seven-day training program of 36 hours in which these teachers were oriented to serve in the corrective reading program. A training program emerged from this operation "spoon-feed" that is considered of such importance that it will be discussed in a separate section in this paper.

The CRT's serve in NPS in a professional capacity but without the on-the-job supervision and aid of principals, assistant principals, and fellow teachers. The responsibility for supervision is vested in the New York City Public School Board of Education, and only its licensed and duly assigned supervisors may serve in this capacity for their teachers. In order to compensate for this lack of on-the-scene supervision, the coordinator's office maintains a staff of field supervisors composed of highly experienced reading specialists. These supervisors visit the CRT's in a resource capacity. They aid in the evaluation of teaching and in the evaluation of the child's reading

progress. Each CRT is visited on the average of once every ten days. The field supervisor gives demonstration lessons, checks on diagnosis of reading problems, evaluates lesson plans, and aids in all aspects of the corrective reading program. On these visits the field supervisor confers with the nonpublic school principal and, thus, a line of communication is established that works for the benefit of the children served.

Materials

Materials of instruction include commercial, teacher-made, and project-produced materials. Standardized tests for diagnosis of reading and for a basis of evaluating progress are used, as well as informal instruments. Materials to advance reading skills and to provide reading practice are selected for high interest, low vocabulary levels. Programed materials, linguistic approach materials, practice books, and reading games are provided. Basal reader series are not used. Creative use of varied approaches and materials is encouraged. Among the interesting developments that grew out of the CRT training and orientation program are the Reading Lesson Kits that are produced by the coordinator's office. The materials were developed in answer to the need for direction in teaching of reading skills and in the utilization of the commercial materials supplied to the program. Each kit is a packet containing a complete lesson plan for teaching a specific skill. It includes transparencies, classroom chart, duplicating masters, and a reading "game." Newly assigned corrective reading teachers find the packets of immediate help and experienced CRT's use them as a point of departure for creative instruction.

Every corrective reading program has to be equipped from scratch. The NPS provides only the space. To every school, therefore, *Kit A* is sent. This consists of the necessary equipment and supplies, including teacher's desk and chair, file cabinet, storage closet, chalkboard, duplicating machine, children's seating facilities, and supplies such as paper, chalk, notebooks, and pencils. One such kit is sent to every school regardless of the size of the project register. A chalkboard is as necessary when teaching 20 children as when teaching

100 children. *Kit B* consists of reading laboratories, dictionaries, and certain collections of books at all reading levels. This kit also goes to each school. *Kit C* consists of instructional and practice materials in sets of five. Schools with large project registers receive two of *Kit C*, thus doubling the quantity. Orientation in the use of the material provided is given to all corrective reading teachers. All are aided in familiarizing themselves with the needs and backgrounds of the children they serve, and in choosing, from among the materials, those materials that will best fulfill these needs. Special material is also provided, e.g., linguistically oriented books to use with some of the children for whom English is a second language.

Several pilot projects involving use of materials and approaches are being conducted. After evaluating these, they may be enlarged to include all schools in the project.

Teacher Training

The most important result of the project is, of course, the reading progress of the children. However, another important aspect has turned out to be the teacher training program.

Teacher training begins with discussion of basic teaching of reading philosophy and remedial doctrine specifically geared to teaching the disadvantaged. Then the sessions proceed to techniques of diagnosis and treatment. Subsequent all day training and orientation sessions are conducted throughout the school year. These serve to sharpen and refine the desired teaching skills.

The first meeting for a newly-recruited teacher is a three-hour session in which the objectives of the project and characteristics of the disadvantaged children they are to help are discussed. The teacher is directed in how to get started, and the roles of the nonpublic school principal, the liaison officer, and others are explained. The teacher is given help in adjusting to the unique situation of a public school teacher in a private school setting where the corrective reading teacher is *not* part of the school's staff. Techniques of screening the children for admittance to the program are given. Then, for the first time, the teacher reports to his assigned nonpublic school.

The second orientation session is conducted the following week. This session deals with how to diagnose from the informal devices used in screening, how to group the screened children for instruction, and how to administer the standardized reading achievement tests. Additional sessions deal with utilizing the help offered in the New York City Reading Bulletins, directives concerning the various forms used in the program, record-keeping involving pupil attendance and progress, reports that will be required, etc. Other teacher training activities consist of demonstration lessons conducted by field supervisors, intervisitation in nonpublic and public schools, and small group conferences of corrective reading teachers, planned to improve competency, foster sharing, and encourage creativity in teaching.

In addition, all corrective reading teachers attend audiovisual training sessions in which supervisors of the New York Board of Education audiovisual department demonstrate the use of equipment. Teachers are shown how to use the overhead projector, recording and playback instruments, machines for reproducing printed and illustrative material, etc. Much of this "hardware" has been made available, with Title I funds, for the corrective reading teachers' use in the nonpublic schools.

Parent Involvement

One of the recent primary objectives is the increased involvement of parents in the reading program of the children serviced. There are three areas aimed at involving parents in the corrective reading of children on the program. The first one below involves all corrective reading teachers. The other two are limited to selected teachers in selected nonpublic schools.

Individual Parent Conferences

The corrective reading teachers are oriented in techniques concerning this activity. Specialists in the field of human relations address the teachers at their orientation sessions. Other training that proceeds from generalizations to specifics is conducted by the coordinator and her staff. Plans for parent conferences are discussed

with the nonpublic school principal and invitations to the parent are issued from his office. The conferences are held at mutually convenient times outside of the corrective reading teacher's instructional hours. The nonpublic school principal may attend the one-to-one conference if he deems it advisable.

Parent-Group Conferences

A selected group of corrective reading teachers has received orientation in this aspect of parent involvement. All such conferences are planned with the nonpublic school principal, and invitations to attend are issued from his office or with his written approval. These take place during the corrective reading teacher's conference hour. The agenda is planned in advance and submitted to the project coordinator for suggestions and for approval. After the meeting a report is sent to the coordinator.

Parent Workshops

A selected group of corrective reading teachers has been instructed by outside consultants as well as by the professional staff of the coordinator in approaches, procedures, and materials. The nonpublic school principal invites the parents concerned to participate in the workshops which are planned in a series of four or five sessions held during the corrective reading teacher's conference hour. Special materials are demonstrated and distributed to the participants, and corrective reading teachers conducting the workshops are encouraged to add their own skills to the structured procedures.

In the event that the workshops and conferences are judged to be effective, plans will be enlarged to include all corrective reading teachers.

Each year the coordinator arranges and conducts meetings involving the nonpublic school teachers and principals in order to familiarize them with the project and assure the smooth functioning of the program.

Evaluation

Following the guidelines for all Title I projects administered by the New York City Board of Education, the corrective reading

services program in nonpublic schools is evaluated annually by an independent outside agency. The Bureau of Educational Research (BER) conducted the 1968-1969 evaluation. The evaluation dealt with all aspects of the program and involved the project itself, the administration, teacher performance, student progress; and principal, nonpublic school classroom teacher, and parent reaction.

This paper has described only one of the reading programs for disadvantaged children. There are many reading programs going on in public as well as in nonpublic schools. The problem is so vast that only by focusing on one small segment at a time can the goal of quality education for the disadvantaged be nearer accomplishment.

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Summer Reading Programs

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AN EXTENSIVE SEARCH of the literature yielded ten studies relevant to the effectiveness of ancillary, supplemental, remedial, or summer reading programs. A bibliography of these studies accompanies this report. Of the ten studies found, three were related to elementary school reading instruction, three were concerned with high school instruction, and one considered reading gains in a secondary school laboratory. One dealt with eleventh grade history content, one reported the progress of junior college students in basic skills, one detailed procedures for improving the reading skills of military retrainees, and one was related to an adult program. Another survey dealt with the status of summer reading programs in major cities of the United States.

I do not know the amount of federal, state, and municipal funds spent supporting ancillary reading programs, but the literature hardly reflects what I suspect has been a massive investment. I suspect that the reports of thousands of summer programs supported by federal funds are in transit from somewhere to someone; the state supported programs are probably being evaluated by random selection, and new local programs are being developed according to the most recent guidelines. In short, I suspect most of us do not know what we are doing in relation to ancillary reading programs, but we are all grateful for federal support of our ignorance.

Any discussion related to summer reading programs has at least two dimensions in terms of curriculum and pupils to be served.

The first dimension concerns those students who are not achieving in a manner equivalent to their capacities and for whom a remedial-type program should be developed. The second dimension concerns enrichment and/or accelerated reading programs intended for pupils achieving at or above expected achievement levels. While we probably have had more experience with remedial-type summer

reading programs, the available research reviewed since 1960 has not indicated significant success with such programs. Therefore, I shall concentrate on the remedial-type summer program in this paper.

Selection of Pupils

A first concern in the conduct of a successful summer ancillary remedial-type reading program is the selection of the pupil population. Not surprisingly, we find the greatest need for remedial-type programs in those areas where there is the greatest incidence of reading disability; therefore, numbers become an aggravating reality. Indeed, the failure, I suspect, of many summer remedial programs is directly proportional to the number of remedial-type pupils assigned to individual teachers. While there is no panacea in simply reducing the number of children accepted or encouraged to enroll in a summer reading program, the total number of children who may need the remedial service is overwhelming.

Most of us agree that we want to enroll those pupils who have the greatest potential for success. How we determine that group is another matter. Intelligence tests, capacity-achievement tests, listening comprehension tests, and group diagnostic tests have all been used to determine which pupils will maximally benefit from instruction. One may use whatever test data are available plus classroom teacher judgment in selecting the summer remedial program pupil population. If no data are available a comparison of listening comprehension grade level score and reading achievement score could be used as a criterion for selection. Such a comparison should yield a grade level difference between capacity and performance. The youngsters may then be ranked within grade levels to determine which children could profit optimally from a summer-type reading program.

There is a persistent and, unfortunately, prevailing point of view that tends to delay formally designated remedial programs until grade four, or even until grade six or seven. I am increasingly convinced that the earlier formal, remedial-type instruction is begun, the better. There is little harm and much good in integrated ancillary reading services early in grade one. The symptoms of read-

ing deficiency are clearly apparent in the first month of school. Teachers should vigorously and sensitively address themselves to that problem immediately. There is no evidence that any formally designated remedial instruction has any adverse effect upon the sound psychological/emotional development of the young child. Indeed, my own experience, and that of many experienced classroom teachers, is that most of the psychological/emotional problems are the result of failure to learn to read, not the cause of such failure.

What this seeming digression supports, then, is a priority of pupil enrollment in remedial programs, giving first priority to grade one pupils and so on through the grades until we have reached the maximum projected pupil population.

I am not in the least suggesting that we should abandon our efforts to improve the reading achievement of intermediate or upper grade youngsters. What I am suggesting is a procedure that should be used in dealing with a reality—x number of pupils need help, x number of dollars are available to provide such help, x number of skilled teachers are available for such a program. The priority would be the youngest child with the greatest reading potential.

Selection of Staff

It goes almost without saying that we want our very best teachers involved in a summer reading program. I say *almost* because, in our zeal to get experienced teachers at this or that grade level, we sometimes overlook opportunities to broaden the instructional expertise of our staff by encouraging quality teachers at higher grade levels to teach primary grades, and vice versa. The intellectual stimulation of a different age group, the opportunity to creatively approach old problems with new, or different, methods, and the necessity for retooling one's instructional skills in adjustment to new situations overcomes any shortcomings of the "lack of experience" variety. Good teachers are good teachers and what they do not know about the behavior of children at various chronological or maturational levels they rapidly learn. With more intuition than empirical evidence, then, I would select the best people available and worry little about grade level experience. Some wag, by "reductio ad absur-

dum," may take that last statement to mean that I would put the high school industrial arts teacher in the grade one room. I would seriously consider it if I were convinced that he could teach reading! And, may I ask rhetorically, why not?

Testing

The many summer remedial reading programs I have observed, especially those supported by Federal monies, consist of too much testing and too little teaching. Indeed, it is possible to devise a six-week program of tests, retests, tasks assessments, and levels assessments that will successfully prevent any remedial instruction from occurring. It seems to me there are two purposes in any testing protocol related to summer programs. The first is to determine the instructional levels of pupils according to some standardized and/or commercially developed curriculum level, and the second is to determine which specific skill deficiencies are basic to the reading problem. It is an indictment of the competence of our profession that many classroom teachers cannot provide such information without additional standardized testing. It is beyond the scope of this paper, but I can assure you that many—too many—classroom teachers cannot provide specific information relative to the reading failure of their pupils. We talk too often in global terms such as "word attack skills," "context clues," and "inattention." Rarely do we direct our attention to pupil inadequacies with the digraphs *th* or *ph*, for instance, or to difficulties with three-letter blends such as *thr* and *str*. In too many instances the classroom teacher cannot provide useful information regarding pupil deficiencies to the summer program teacher; thus, valuable time is lost administering standardized tests which, in most instances, are not analyzed test item by test item to reveal specific pupil deficiencies. My pessimism regarding summer reading programs hinges on the knowledge that, in all too many instances, we do not know what we are attempting to remedy. If standardized diagnostic individual tests and/or group tests *are* necessary to provide some direction to the summer efforts, then such tests should be given early in the preceding spring to allow time for item analysis and—hopefully—for the development of specific instructional materials for specific skill deficiencies.

Grouping for Instruction

I am frequently asked what is the ideal organizational plan for an elementary school reading program. The same question may be asked concerning summer reading programs, and there is no simple answer. The literature is replete with descriptions of various grouping arrangements, and we have probably had as many "palpitations of the pendulum" with respect to the grouping question as we have had with the phonics problem. In my view, effective organizational patterns are more dependent on effective teachers than upon administrative design. The way pupils are grouped administratively for a summer reading program may be a matter of intentional design, convenience, or necessity. It is what happens *after* the administrative grouping takes place that really counts. I am sure some administrators burden teachers with too many pupils performing at too wide a range of instructional levels with complex skills deficiencies. But I am equally sure that many teachers assigned with smaller groups with similar skill deficiencies do not differentiate their instruction in the best interest of the pupils so assigned. There is a difference, then, between administrative grouping and intra-classroom instructional grouping. Administrators need to be sensitive to the efficiencies of teachers with respect to numbers of pupils and types of disabilities. Teachers, on the other hand, need to appreciate that available financial resources, community expectations, and overall school morale are problems that are not easily resolved by administrators. I think, however, that we can logically establish a principle for the grouping of pupils for summer remedial-type reading programs: assign the smallest possible number of the more difficult cases to the best teacher.

Instructional Materials and Methods

One of the first, and I think unwise, steps which many reading personnel take in implementing summer remedial programs is selecting "newer," "different," or "promising" ancillary reading materials. Many regular school year remedial programs fail because the remedial curriculum is in no way correlated or coordinated with the regular classroom offering. I have observed many remedial-type

classrooms which provide little more than another opportunity for failure. If a pupil is having difficulty with one reading program, it defies logic to assume that he will be successful with another of the same kind! Commercial reading programs are rarely compatible with one another, nor should they be. Rather, such systems are generally mutually nonreinforcing.

From the curriculum materials point of view, pupils fail because of inefficient teacher instruction and/or insufficient pupil practice in specific skill areas. Pupil failure is rarely predicated on the reading system used for instruction. The materials selected for use in a summer reading program should therefore be more skills-oriented than vocabulary-acquisition-oriented. Forty minutes' practice with the sound that the beginning consonant *d* stands for (if it takes that long for mastery) is more useful than 40 minutes of oral-reading practice for some ill-defined objective. This is not to suggest that a summer remedial program should be skills practice and little else. What is strongly suggested, however, is that the intensive skills practice should occur within that sequence of skills which forms the core of the regular school year developmental reading program and that the practice of skills should occur in written discourse similar to that used during the regular school year. I see little merit in having a linguistically based summer program as prelude to another developmental autumn program.

Inherent in any discussion of instructional materials is a discussion of instructional methodology, although the two are often confused. I will confine my discussion here to clarifying the terms *remedial* and *developmental.*

I do not see any significant differences between effective remedial methods and effective developmental methods any more than I see significant differences between clinical methods and regular classroom methods. Every effective remedial technique should be in the repertoire of the classroom teacher and all effective clinical procedures should be employed by classroom teachers. Indeed, a great challenge to teacher education is to provide classroom teachers with a variety of instructional protocols sufficient to prevent reading failure from occurring in the first place. The degree to which we are dependent upon reading clinics and summer ancillary or remedial-

type programs is perhaps one measure of the degree to which our colleges of teacher education have failed their students.

Instructional Time in the Summer Remedial Reading Program

In discussing instructional time related to summer reading programs we are really talking about three time considerations:

—the total length of the summer program
—the amount of time allocated to reading instruction each day
—the amount of time allocated to specific types of instruction and/or practice within the total time allotted to reading instruction.

The total length of the summer reading program, whether remedial or enrichment, is probably contingent upon the availability of funds for the program. That fact may be too mundane for a professional journal but it is a reality. How much time for a summer program? How much funding is available? What local customs affect summer school programing? Once the second and the third questions are answered, the first question need not be asked!

Most summer school programs operate during the morning hours, and the average instructional time for all subjects is two and one-half hours per day.

How much instructional time should be allocated for remedial reading instruction? Again a principle may be cited: the amount of time allocated for reading instruction per day should be proportionate to the severity of the reading problem. If the reading problem is critical, use all available instructional time. I have little patience with those seeking "balanced" summer instructional programs. Children with reading problems come to school with quite unbalanced reading skills and unbalanced psychological postures. The remediation should be unbalanced in terms of available time, and the imbalance should favor word-skill instruction.

How much time within the total time allotted for reading instruction should be allocated to specific skills areas? My observations of many summer reading programs have revealed that there is too little specific skills instruction and too much purposeless pupil oral and/or silent reading activities. If a given reading subskill deficiency

is basic—a deficiency in the area of beginning-consonant-sound knowledge, for example—the maximum amount of instructional time should be directed toward alleviating that problem. There is little merit in pupil practice with the use of context clues if the problem is basically phonic in nature.

Evaluating the Summer Reading Program

Summer reading programs conscientiously planned and energetically implemented have little need for standardized test evaluation. Pupil progress within the reading curriculum used during the regular school year program is the single best criterion for measuring the success of a summer program. The attitude of the children toward the summer reading program is another valid measure of success. After a child spends five or six weeks in a summer reading program, is his "looking out the window" a rare circumstance? Is the classroom "where the action is" after the program is finished? These questions are, of course, rhetorical. Most teachers know when they have been successful and when they have failed. Since many summer school teachers teach the same pupils they have taught before (or the ones they will teach in September), we might ask another rhetorical question: Why don't we do our summer "thing" all year long?

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Diagnostic and Predictive Measures in the Teaching of Reading in Sweden

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IN SWEDEN it is held that growth in reading, as growth in other learnings, cannot be hurried without some undesirable, and even damaging, effects on some children. Therefore, we try to make the transition from home to school as easy as possible by having the children go to school for only two hours a day the first two or three weeks of school, and in groups of no more than twelve or thirteen children. The teacher is doing her best to create in the children positive attitudes toward school and the working life there.

With these beginning seven-year olds we are of the opinion that it pays to "waste time," to start very easily, introducing a variety of reading readiness exercises and using materials for many children on a difficulty level rather far below their capacity level. This "make haste slowly" policy permeates the teaching of beginning reading in Sweden.

Even if the majority of children might be ready to be taught reading when they start school, there are always some who, for different reasons, have not reached the desired readiness level. It is considered unrealistic to expect that these children will make normal progress in reading. Whatever the reasons for their lack of readiness, the school must let them get a calm and cautious start in reading. Otherwise, these children run a big risk of becoming "failures" and of getting a lifelong dislike of reading.

A Diagnostic Approach is Recommended

Children of the same chronological age differ widely in capacity to learn, intelligence, background experiences, and all kinds of personality traits. Research workers all over the world are in agreement with this.

My own investigations of first grade children in Sweden revealed a range from four years and eleven months to eleven years and eight months in mental age, while differences between the children's chronological ages were very small. The variance within the same class as regards other variables was found to be equally extensive. The need of organizing instructions to provide for these differences *between* and *within* children is therefore evident and urgent. As a consequence of research results of the kind I have mentioned, the school authorities have recommended a diagnostic approach and as far reaching an individualization of the teaching of reading as possible.

The procedure on principle for efficient special teaching and treatment of a child with potential reading disabilities will be as follows:

1. Diagnostic measuring steps.
2. Teaching and treatment based on the results of the tests used.
3. Renewed diagnostic testing.
4. Continued testing and treatment from time to time modified according to the test results, etc.

The diagnosis is not to be considered as finished as soon as it has been carried out in the beginning of a teaching period. It is supposed to go on all the time the teaching is going on—day-by-day, week-by-week. In theory most teachers in Sweden accept this view by now, even if, for various reasons, it is far from generally put into practice.

Reduction of Cases of Reading Disabilities

The number of cases of reading disabilities in grades one through three of the elementary school may be reduced by up to 80 percent by an early diagnosis of all children at the start of grade one and by the immediate establishment of a teaching situation synthesizing ongoing diagnosis, treatment, and remedial teaching for those children who, on the basis of the diagnostic findings, could be expected to experience special reading and writing disabilities when offered only ordinary teaching facilities. By the use of specially

constructed test batteries it is possible to put forward a much more reliable prediction than before as regards the development of the children's reading ability and to decrease to a considerable extent the error margin in the selection of pupils needing remedial teaching in a reading clinic.

Those are some of the results that I have presented in a final research report to the Royal National Board of Education in Sweden. The studies reported are of a longitudinal type and have been ongoing for six years. The pilot study comprised 20 classes with a total of 386 pupils and the field experiments included 72 classes with a total of 1,653 pupils from 12 cities in various parts of the country.

If each child is to be given tasks suited to his level of maturity (tasks that he can tackle successfully), there must be, among other things, instruments available to make a satisfactorily correct diagnosis of the stage of development and maturity of individual beginners possible. The results of conventional school readiness tests may, to a certain extent, give some guidance for the individualization of instruction, which is considered especially important for beginners. But the investigations have shown that ordinary school readiness tests, administered before the beginning of schooling in grade one, have proved to be only moderately correlated with the results of reading and writing tests given after one year or more of school attendance. The coefficients of correlation are usually between +0.40 and +0.50. These tests are consequently not very reliable prediction instruments if used without supplementary procedures.

The Reliability of Prediction Instruments Raised to a Considerable Extent

From the results of my now reported studies, the conclusion can be made that, if school readiness tests are complemented by specially constructed batteries of reading readiness tests and perception tests, the reliability of prediction can be raised to a considerable extent, especially if the tested new system with prognoses in several steps is used.

On the basis of the results of the diagnostic tests used, it was anticipated that certain children would experience reading disabilities,

if no special remedial measures were taken. From the first school days of grade one these children were given special remedial instruction by a reading clinic teacher in cooperation with the regular class teacher, if they belonged to the experimental group (the one half of a class). No remedial instruction of this kind was given to pupils of this category if they belonged to the control group (the other half of the class having the same teacher).

To test the hypothesis that it is possible to reduce considerably the number of cases of special reading disabilities during the first three years at school, the experimental-control group method was applied. The differences between the two groups were studied by, among other methods, analysis of covariance. A series of multiple regression and correlation analyses were made in order to study the prognostic power of various predictors of reading and writing ability in grades one to three. By means of these analyses it has been demonstrated that the number of the predicting instruments could be considerably reduced with an only negligible deterioration as regards prognostic value.

A group of three variables has been crystallized, and each one can be expected to contribute significantly to good prognosis: 1) the battery of reading readiness tests, 2) one of the five visual perception tests (visual letter perception), and 3) the battery of school maturity tests.

Out of 30 criteria variables registered (10 variables at the end of each of grades one, two, and three) we have calculated, with the use of conventional transformation procedures, composite indexes as regards three major groups of variables: reading accuracy, reading comprehension, and spelling.

The Reading Readiness Variable Gave the Highest Prognostic Values

Out of the different predictors studied, the reading readiness variable has throughout given the highest prognostic values, regardless of which criterion variable was examined. As was expected, we found that the accuracy of prediction decreases with increasing grade level (one through three) as regards all types of criteria.

The aim of the remedial teaching has been to prevent or elimi-

nate reading and writing disabilities among pupils in the experimental group. These criteria, reading accuracy and spelling, seem to be most fitted to indicate reading and spelling disabilities at this level. The fact that the analysis yielded significant group mean differences favoring the experimental group in five cases of six strongly supports the hypothesis that the remedial teaching has had the expected effect. The noted existence of a region of significance, as regards spelling ability, in grade three at a reading readiness level below +.4 sigma, which was demonstrated by the use of a method of "matched regression estimates" (see Walker-Lev, 1953) gives further support for the hypothesis.

Because this region of significance means that the total experimental group superiority in spelling ability is mainly due to a superiority of experimental group pupils with low or medium initial reading readiness levels, it is just those pupils who have been given reading clinic teaching.

I therefore consider the conclusion justified that the remedial teaching has significantly increased both spelling ability and reading accuracy of the "clinic pupils" in comparison with equivalent pupils in the control group. The results of the investigations also show that the reading clinic teaching contributed to reduce the variance as regards the results on reading and spelling tests among the pupils in the experimental groups in relation to the variances of the same tests in the pupil samples used in the standardization procedures.

Early Diagnosis and Remedial Instruction Have a Strong Positive Effect

In a subpopulation, consisting of pupils from both groups having low initial scores on given tests, a number of criteria variables were subjected to analysis of variance by means of various types of multifactorial designs. The results of these analyses are also interpreted as support for the main hypothesis, that early diagnosis and remedial instruction in reading clinics have a positive effect on the development of both reading and spelling ability.

The frequency of pupils with reading and spelling disabilities was found to be consistently lower in the experimental groups than in the control groups—in the experimental group less than 1 per-

cent of the population as against about 5 percent expected according to the operational definitions used.

Analyses of Variance on a Multifactorial Design

Analyses of variance were performed on a multifactorial design: 3 intelligence levels (IQ) × 3 initial reading ability levels (IR) × 2 experimental conditions (E, C_1).

The E group was significantly superior to the C_1 group in Reading Accuracy in all three grades and in Spelling in grades two and three.

The analyses yielded no significant values for interactions of experimental condition with IQ level and/or IR level. Some interesting trends were observed, however.

In grade one the E group superiority was about the same at all IQ levels—the lower the IR level the greater the superiority. As regards the potential cases of *special* reading/writing disabilities (at least normal IQ and low IR level) the E group superiority was rather great in grade one.

In grade two, and still more in grade three, however, the E group superiority was greatest at the two lowest IQ levels and especially great among pupils with a very low IQ and a very low IR level. For potential cases of *special* reading/writing disabilities the E group superiority was small in grades two and three—or even nonexistent.

Thus, reading clinic instruction seems to be effective in the long run, not only when given to pupils with potential *special* reading/writing disabilities (normal IQ and a low level of IR) but also—and perhaps even more so—when given to pupils identified as potential reading/writing disabilities at a *low* intelligence level.

The proportions of poor readers and poor spellers (concepts operationally defined) in different cells in the IQ level × IR level × experimental condition design were also computed. The proportions were almost consistently smaller in the E group than in the C_1 group.

It is concluded that the clinic instruction given to E group pupils has reduced the frequencies of reading/writing disabilities in grades one, two, and three, respectively. The frequency of reading disabilities was more markedly reduced than the frequency of spelling disabilities.

The Predictive Power for Various Criteria and for Various Prediction Periods

In my report I also presented an analysis of the reliability of the selection of pupils for reading clinic instruction, based on predictions from collected test data. The prognostic validity of different test batteries decreases with increasing length of the period of prediction. Therefore, a selection of pupils for clinic instruction based on test data may be made more reliable if successive short-term prognoses are made. If the first prognosis of reading/writing disabilities is made at the school start, it seems desirable to make new prognoses (based on new data): 1) at the end of the first term, 2) at the end of grade one, and 3) at the end of grade two.

The predictive power for various criteria and for various prediction periods are given in Table 1. The predictive power for short-term prediction is—on the whole—to be considered as good, especially when predicting reading accuracy.

The reliability of a selection of pupils for instruction in clinics is also studied through an analysis of risks of error in selection. "Risk of error in selection" is defined as the risk that a pupil is not selected for instruction in a clinic, although according to accepted criteria he is in need of such instruction.

At a given critical value in the criterion variable (expressed conveniently in z-scores), the extent of the risk of error at different percentages of a year group assigned to reading clinics can be calculated. The calculations are based on the assumption of normal distribution in predictors and criteria and of homoscedasticity,

if $z_{p(x)}$ indicates the point of intersection in the distribution of the combined predictor values in the selection of the p percent worst in this distribution to instruction in clinics;

$z_{p(y)}$ indicates the critical value in the criterion distribution, corresponding to the desired selection of the p(y) percent worst in the criterion variable;

$z_{p(e)}$ indicates the z-value for risk of error, then

$$z_{p(e)} = [x_{p(y)} - x_{p(x)} R]/\sqrt{1 - r^2}.$$

TABLE 1

PREDICTION OF DIFFERENT ASPECTS OF READING AND WRITING SKILL AT DIFFERENT OCCASIONS AND FOR PERIODS OF DIFFERENT DURATION

(Based on data of the Control group in Exp. Reading-Writing-161)

Prediction of	*Prediction made at*	*Duration of period in terms*	*R*	R^2	*Predictors*
Reading accuracy	school start - AT, gr 1	1	.668	.446	Reading Readiness, School readiness, Visual percept. 2.
	AT, gr 1-ST, gr 1	1	.724	.524	Ditto + Reading tests 5a and 7
	ST, gr 1-ST, gr 2	2	.829	.686	Reading accuracy, grade 1
	ST, gr 2-ST, gr 3	2	.922	.851	Reading accuracy, grade 2
	school start - ST, gr 1	2	.507	.257	Reading readiness, School readiness, Visual perception
	ST, gr 1-ST, gr 3	4	.774	.600	Reading accuracy, grade 1
Reading comprehension	school start - AT, gr 1	1	.579	.335	Reading readiness, School readiness, Visual percept. 2.
	AT, gr 1-ST, gr 1	2	.767	.588	Ditto + Reading tests 5a and 7
	ST, gr 2-ST, gr 3	2	.551	.304	Reading compreh. grade 1
	ST, gr 1- ST, gr 2	2	.745	.554	Reading compreh. grade 2
	school start - ST, gr 1	2	.622	.387	Reading readiness, School readiness, Visual percept. 2
	ST, gr 1-ST, gr 3	4	.502	.252	Reading compreh. grade 1
Spelling	school start - AT, gr 1	1	—	—	—(criterion not measured in grade 1)
	school start - ST, gr 1	2	.553	.306	Reading readiness, School readiness, Visual percept. 2.
	AT, gr 1-ST, gr 1	1	.647	.418	Ditto + Reading tests 5a and 7
	ST, gr 1-ST, gr 2	2	.700	.490	Spelling, grade 1
	ST, gr 2-ST, gr 3	2	.785	.616	Spelling, grade 2
	ST, gr 1-ST, gr 3	4	.645	.416	Spelling, grade 1

Note: AT - means end of Autumn Term,
ST - means end of Spring Term.

The value required [p(e)] is then the proportion of the normal distribution lying to the right of $z_{p(e)}$.

Table 2 gives the risks of error for various critical values in the criterion variable at different percentages of pupils selected for instruction in clinics. A minimization of the risk of error analyzed here implies, of course, an increase in the risk of the opposite type of error (i.e., that pupils are assigned to reading clinics although they do not really need such instruction). Selection errors of this type can easily be corrected later, by simply removing such pupils from the clinic.

The critical values in the criterion variable given in Table 2 (—2.5, —2.0, —1.5 and —1.25 z) were chosen to illustrate the risk of pupils with different degrees of reading disability not being selected for remedial instruction in clinics. At the critical values —2.0 and —2.5 the risks of error are 6 and 1 percent, respectively. The risks of error for the first period (school start) are, it is true, consistently greater than the corresponding risks during other periods. At an assignment to clinics of 20 percent of the pupils at the start of school for a selection of the more pronouncedly poor readers (criterion values below —1.5) the maximum risk of error is never greater than 10 percent, however.

It should be observed that the choice of criterion in this analysis —measures of reading accuracy—implies that selection to reading clinics includes pupils with potential reading disabilities independent of the level of general intelligence. No special analysis of risks of error in the selection of pupils with special reading disabilities (as defined earlier in this paper) has been considered necessary. There were two main reasons for this: 1) the pupils with *special* reading disabilities are included in the group of poor readers of all intelligence levels, for which reason the risk of error for the former group need not be assumed to be greater than for the latter, and 2) the analysis of the effects of reading clinic instruction reported earlier showed that there are no strong reasons why instruction in reading clinics should be given only—or even preferably—to pupils with special reading disabilities.

To sum up, therefore, it may be said that the risk that a pupil, needing instruction in a reading clinic, will not be assigned to such a clinic, can be kept at a low level,

TABLE 2

MAXIMUM RISK THAT A PUPIL WITH A CRITERION VALUE BELOW A GIVEN CRITICAL LEVEL WILL NOT BE ASSIGNED TO A READING CLINIC AT SELECTIONS OF DIFFERENT SIZE (IN PERCENT) ON THE BASIS OF USED PREDICTORS

a) Risks of error when the 20 percent worst according to combined predictor measures are assigned to reading clinics [i.e., $z_{p(x)} = -0.84$]

Time of prediction	*Duration of prediction period in terms*	*Critical value in criterion variable* $[z_{p(y)}]$			
		−2.5 [*p(y)* = *.006*]	*−2.0* [*p(y)* = *.023*]	*−1.5* [*p(y)* = *0.67*]	*−1.25* [*p(y)* = *.106*]
School start	1	.005	.03	.10	.18
Autumn gr. 1	1	.003	.02	.10	.18
Spring gr. 1	2	.0006	.01	.08	.16
Spring gr. 2	2	.000004	.0008	.03	.11

b) Risks of error when the 15 percent worst according to combined predictor measures are assigned to reading clinics [i.e., $z_{p(x)} = -1.4$]

Time of prediction	*Duration of prediction period in terms*	*Critical value in criterion variable* $[z_{p(y)}]$			
		−2.5 [*p(y)* = *.006*]	*−2.0* [*p(y)* = *.023*]	*−1.5* [*p(y)* = *0.67*]	*−1.25* [*p(y)* = *.106*]
School start	1	.008	.04	.14	.23
Autumn gr. 1	1	.006	.04	.14	.24
Spring gr. 1	2	.002	.02	.13	.24
Spring gr. 2	2	.00003	.003	.08	.22

c) Risks of error when the 10 percent worst according to combined predictor measures are assigned to reading clinics [i.e., $z_{p(x)} = -1.28$]

Time of prediction	*Duration of prediction period in terms*	*Critical value in criterion variable* $[z_{p(y)}]$			
		−2.5 [*p(y)* = *.006*]	*−2.0* [*p(y)* = *.023*]	*−1.5* [*p(y)* = *0.67*]	*−1.25*[1] [*p(y)* = *.106*]
School start	1	.01	.06	.19	—
Autumn gr. 1	1	.01	.06	.20	—
Spring gr. 1	2	.005	.05	.22	—
Spring gr. 2	2	.0003	.02	.21	—

[1] At a 10 percent selection it is not meaningful to calculate the risk of error at this critical value, for it would imply that p(y) would be greater than p(x), i.e., that even fewer than desired would be selected.

if selection of pupils is checked and corrected at regular intervals during the first three years of school by the help of instruments of the kind tested here, and

if available places in clinics are distributed so that a certain "surplus selection" is made in the first grade during the first term.

Junior High Remedial Reading

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APPROPRIATE REMEDIAL instruction for students with reading difficulties may be the most important single aspect of the junior high school curriculum. The evidence is abundant that many junior high school students need remediation in reading; yet many are neglected because no provisions have been made to help them overcome their reading difficulties. Successful reading remediation is essential for the satisfactory performance of these students in the content area subjects, both in junior and senior high schools, and may prevent some youth from becoming dropouts a few years hence.

Retarded readers are the ones who, for various reasons, are reading below their potential, if their potential can be satisfactorily estimated. They have the mental ability to be good or able readers but have not yet learned to read in harmony with their ability. Such a definition includes any student who is not reading in harmony with his mental ability, whether he is a bright student who is capable of reading beyond his grade placement but is reading at grade level, or an average or bright student who is reading considerably below his grade placement. The concern in this paper is with the latter group, those who are capable of reading materials at their grade level or beyond but who cannot keep up with their peers because of their reading disability.

Four suggestions will be given concerning how to help retarded readers at the junior high school level. One assumption has been made throughout the paper: that teachers and/or administrators have identified the students whose major difficulty is deficient reading ability from those who are slow learners or discipline problems and from those who are so disturbed that they cannot profit from reading remediation.

Learning About Retarded Readers

In order to help junior high school retarded readers, teachers should learn as much about these young people and their reading problems as possible. Among the keynotes to successful reading experiences are the motivation of the pupils to learn and to read, their interest in reading, and sufficient background experiences to make reading meaningful. Teachers should use every opportunity to learn what these students are really interested in, how they really feel about reading and school, and what their real desires or life goals are. Cumulative records, interviews with parents and students, day-by-day observation, interest inventories, and informal conversations with students are some of the sources teachers can use to know their pupils as real people. This understanding of and knowing the student is a continuous process. Spending a few moments occasionally with a student may well reap its rewards in a short period of time. These few moments may give the teacher much insight about what, how, when, and why the students read, their progress, their difficulties, their interests, their ideas, and their dreams. In addition, rapport between the teacher and student is usually strengthened when the student realizes that the teacher's interest in him is genuine.

Teachers need to learn as much as they can about the student's reading difficulty. They need to investigate, if at all possible, when the problem was first noted, what has been done to alleviate the difficulty, and what the past progress was if special teaching had been provided. Interviews with parents or information from cumulative records may provide teachers with insights not only about the reading problem but also about any factors which may be inhibiting the student's progress in reading.

Diagnosis of the reading problem is essential for the planning and conducting of successful reading instruction for retarded readers. This does not imply that a complete, intensive diagnostic examination should be made of every retarded reader assigned to the teacher. Time is saved and frustrating experiences for both students and teachers can be avoided if instruction is directed from the beginning

to the skills each student needs. The extent to which diagnosis is carried out is dependent upon the numbers and kinds of each student's reading deficiencies. Diagnosis should systematically continue until the major areas of the reading difficulty are identified and a reading improvement program can be planned for each student. When teachers are familiar with many kinds of standardized tests, informal testing procedures, and conference and observational techniques, they will know which diagnostic avenues yield the kinds of information desired.

Because there will probably be a wide range of abilities and achievement among a group of junior high school retarded readers, teachers should be prepared to identify and to provide remediation in any area of reading: word recognition, vocabulary, comprehension —both literal and nonliteral—study skills, and/or rate of reading. Since students may be weak in one, two, or all of these areas of reading, the teacher must know which skills logically precede others, as difficulty in one area may reflect a problem in a more basic area. For example, comprehension may be influenced by poor word recognition skills, or rate of reading may be slow because of poor comprehension or a small stock of word meanings. Within each area of reading there is a myriad of skills which need to be assessed for possible gaps.

Diagnosis, of course, does not end with the initial assessment of the reading, but continues as long as the teacher is helping the student. As progress in reading is made, new and different reading needs may become apparent. As a result of new insight about the reading of students, teachers can change their instructional plans to suit the needs of their pupils.

Providing Meaningful Instruction

Teachers can help junior high school retarded readers by providing them with meaningful instruction in reading. Instruction should be often, preferably four or five times a week. It should be based upon the findings of the diagnosis and should be as individualized as possible by being geared to the needs of each student. Instruction should emphasize the skills which the student does not

possess but which are important for further growth in reading. Teachers should capitalize on the strengths of the student, as revealed in the diagnosis, and strengthen areas of weakness. Both students and teachers should be aware of long range goals. When students help in the formulation of their own goals, instruction is usually more meaningful for them. To insure immediate success, which these students need very badly, the first goals should be easily attainable but should gradually become more difficult so that students are challenged and progress in reading is attained.

All students who are deficient in reading need much meaningful practice if they are to make progress. This aspect of reading remediation is often omitted because teachers think if students can state a generalization and apply it to a few selected words, they will automatically apply these principles to anything which they read. It is only after much meaningful practice that most retarded readers can apply their newly learned skills effectively. This practice should accompany skill development and not be left to chance or a later time. Meaningful practice should be an integral part of the instructional period so that the skills can be strengthened as they are being learned.

Meaningful practice can be attained through the student's reading of easy books for fun or information and the use of a variety of practice materials which require the understanding of running context. The student's own textbooks are sometimes suggested as a source of materials for meaningful practice. The principal limitation of the latter suggestion is that students who require special instruction in reading do not always have the necessary skills to read their textbooks. The whole purpose of remedial reading instruction may be defeated if students are given materials which are inappropriate.

If instruction in a reading class or group can be organized around a topic of interest, students have a meaningful setting in which to practice the skills they are learning. For example, they may wish to study occupations in which they are interested. By reading materials on levels which they can handle about a vocation of their choice, all can contribute information in group discussions and each can learn from the others. Written work can also be based

upon the topic of the unit. Selected successful people within some of the occupations could talk to the classes and perhaps make suggestions about the importance of reading to their field of endeavor. How much more meaningful a unit approach would be than an overabundance of drill on isolated words!

Meaningful practice can take place in situations other than in the classroom. Some junior high students may gain practice by reading easy books to younger brothers or sisters or to younger pupils in the lower grades, provided they have had the opportunity to practice the reading. In these cases, the vocabulary load of these books should be in harmony with the reading level of the junior high student. The books may not be appropriate for the interest levels of junior high school students but may be acceptable since they are reading the stories to children who will enjoy them. Reading materials for content area subjects, if selected commensurate with the reading achievement of students, are another source of meaningful practice.

Both instructional and leisure reading materials should be interesting to the learner and harmonious with the goals of instruction. Because of the wide diversity in the needs and achievements of junior high school retarded readers, no one book is appropriate for all students. Materials used for instructional purposes should provide for the sequential development of the skills needed by each student. When selecting instructional materials for retarded readers, teachers should be aware of the fact that students may be unable to accomplish work on the reading level indicated by their test scores, which may represent their frustration levels. They can stretch to these levels on tests but should not be expected to maintain them at all times. It is wise, especially when reading instruction is initiated, to select instructional materials one or two years below the test scores and leisure reading materials on even lower levels.

Evaluation should be a part of the instructional program and should be continuous so that remediation can move in the direction which will be most profitable for the students. Both students and teachers need to be aware of what has been accomplished and what is left to be done. Records kept jointly by students and teachers help to motivate students. For some students it is very important that

daily progress be noted and honest praise from the teacher be given; if these things are done, students do not become so discouraged as they might otherwise. Although standardized tests are often used as a means of assessing reading growth, especially at peak periods during instruction, teachers should not overlook informal ways of evaluation at other times. When asked when she evaluated the reading progress of her students, one able teacher said, "I evaluate them and my teaching every day I teach them."

Making Curricular Adjustments

Curricular adjustments should be made for most retarded readers. Remedial reading teachers have long been concerned about the plight of their pupils when they are in other classes and are expected to fulfill the same reading requirements as their peers who have had more fortunate reading experiences. Such a situation can only inhibit growth in reading because retarded readers, who cannot possibly read the materials, may, understandably, give up in their frustration.

Content area subjects provide an opportunity for students to practice in a natural setting the reading skills which they are acquiring. Today, because there is an abundance of materials written for poor readers, it is possible for teachers to select materials which their pupils can read. Tradebooks, newspapers, magazines, textbooks in some subject areas, workbooks, and pamphlets on different reading levels are currently available. When a unit approach is used in content area subjects, retarded readers can contribute to the discussion if they have been provided with materials which they can read. The foregoing makes more work for teachers, especially the first time they make necessary adjustments in materials. However, if they are willing to help and to stimulate retarded readers with appropriate materials, the experience will be more fruitful to all than the reading of a single textbook.

If no adjustments are made in instructional materials or course requirements, other alternatives must be substituted. With each year that passes by, retarded readers become further and further behind their peers in the development of important concepts because they

have not been able to read their textbooks. One alternative strongly recommended is to have assignments read to them by someone with whom the student feels comfortable: a parent, a brother or sister, a volunteer tutor, or a classmate. If the foregoing is impossible, tape recordings should be made of textbooks or similar sources, either totally, partially, or in adapted form for use by retarded readers. These tapes could be placed in listening laboratories and become a part of the learning materials of the school. By listening to either the oral reading of the assignment by another person or to tape recordings, students would have opportunities to gain insight into the topics being studied in their classes and to keep abreast with the concepts and ideas being discussed. Films, filmstrips, and pictorial presentations may also be used in a similar manner.

Other curricular adjustments may be necessary for the severely disabled readers. They may need to be assigned to fewer courses or have less reading assigned to them than other students.

Every teacher must accept the responsibility for helping retarded readers. Such a statement does not imply that all should attempt to teach the reading skills per se, which they need; in order that the student does not become more confused than he is, one teacher should be responsible for his skill development. Communication among those who work with retarded readers should be as often as feasible, for it is through a combined effort that the poor reader will be most greatly benefited.

Developing and Broadening Reading Interests

Teachers should use every available means to stimulate students to develop and broaden their interests in reading. By the time retarded readers enter junior high school their dislike for reading has snowballed to such an extent that teachers must be cautious, especially at first, in their approach to leisure reading. Yet, because of the importance of leisure reading in the strengthening of skills which students are learning, it is essential to reach these students. The development of reading interests has long been in the realm of the English department, but all teachers should share the responsibility. Sometimes a science or social studies teacher can use the

student's interest in the subject to make suggestions for leisure reading. Implied in the last statement is that these teachers are informed about the reading status of their pupils and know books which retarded readers can read. Some inservice work may be a necessity in junior high schools.

One of the obvious reasons that disabled readers do not enjoy reading is that they have not had access to books which they could read. In many instances, they have been forced to try to read materials which were too difficult for them. Sometimes the problem of lack of interest is solved by helping the student find an exciting book which is easy enough for him to read. When this occurs, students have been known to say that they enjoyed a book for the first time. It will be easier to help them with a second book, for they are on their way.

A second reason retarded readers do not enjoy reading is that in many schools they must prepare book reports. Since they are also usually poor in writing and spelling, they have no appetite for the preparation of these reports. Book reports have never been known to stimulate free reading and do not accomplish the goals for which they have been intended. It is surprising that an educational practice with such a small amount of promise as the book report has been continued for so many years. For these particular students it is much better for the teacher to say, "Has anyone read a good book lately?" and to permit the discussion to move from there. Since these students need the stimulation of group discussions, they can share books they have read informally through buzz sessions, group discussions, or informal conversation. Classtime should be provided for free reading so that students realize this kind of reading is important. When students need as much instruction as retarded readers do, free reading is often neglected for skill development. However, teachers must not lose sight of the fact that one of the major reasons for improvement in reading is the enjoyment which it should bring.

As teachers work with junior high retarded readers, two important factors must be remembered. First, retarded readers really want to be able to read satisfactorily. Some may conceal this desire by wearing a front and letting others believe that the matter is not

important. However, they really wish to prove to themselves and to others that they are not dumb and that they can read as well as their peers. Second, almost all can learn to read adequately if they receive proper instruction adjusted to their needs and interests. These students need help so that they can make worthwhile contributions to society. It is urgent that schools find effective ways to help retarded readers.

Project Transition: A Program for Underachieving College Bound High School Seniors

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MANY YOUNG PEOPLE who graduate from high school each year lack the basic skills necessary to enter college. For a number of students, the problem is not lack of intellectual ability, but a combination of several other factors. Among these are inadequate personal counseling, limited educational opportunities, a lack of understanding of the tasks that confront them in college, poor self-concept, and lack of background in a culture which accords academic achievement a low priority *(11)*. This is not intended to cast undue adverse reflection on the schools from which these students come but rather to recognize that, under present conditions of overcrowded classrooms and understaffed faculties, many youths pass through the schools without receiving the individual help they need. Meeth *(6)* states

> The growing need for and the number of precollege preparatory programs throughout the country points a finger directly at the possible inability of the public school system in America to overcome the social and educational problems of the disadvantaged youth of their own community, placing an unnecessary burden upon the college. Recent trends toward higher and higher admissions criteria have caused institutions to develop precollege preparatory programs on the college campus as a device for maintaining standards and at the same time recruiting larger numbers of students from the ranks of the disadvantaged. This maneuver has tended to be effective in avoiding difficulty with accrediting associations as well as maintaining academic standards sufficiently high to enable graduates to enter graduate study with relative ease.

Perhaps at this point it would be well to clarify the term *underachiever*. Meeth (*7*) states that to call students who could do more than they have done *underachievers* is to oversimplify the term, since this description would fit almost anyone. Students must be considered relative to one another or to a system of testing to determine whether or not they are living up to their potential. Even standardized tests are not adequate for all purposes. At Harvard, students with scores 500 points below the admissions level performed about as well as those regularly admitted (*3*). In Project Transition, students were considered underachievers if they failed to perform at a level indicated by either their IQ and/or by standardized test scores.

Before the Project Transition program began, group tests and inventories were administered: the American College Test, Edwards Personality Preference Schedule, Missouri College English Placement Test, Nelson-Denny Reading Test, and the Strong Interest Inventory. In addition to these group measures, the Wechsler Adult Intelligence Scale was administered individually. Information from the tests and inventories served as the basis for individual counseling, tutoring, and course placement.

During the testing period, students also attended a series of college life orientation programs. Films were shown on reading skills, the importance of developing good study habits, use of the library, and group dynamics. These films introduced topics to be explored later in the skills course. To bring the student face to face with the demands made by the college, an admissions counselor instructed them in such necessary matters as how to plan their curriculum, how to figure a grade point average, when to drop a course instead of fighting it, and the importance of transcripts. A superior student talked about his own study habits and classroom practices which had helped him to succeed. Most of one session was devoted to discussing reasons for participation in Project Transition. Students cited many reasons such as, to adjust to college life, to increase knowledge, to be able to attend college in order to work or to help others, to avoid the draft, to get away from mother, and to develop self-esteem. When students were asked to discuss the main problems they had experienced in high school work, they mentioned poor high

school education, laziness, poor study habits, inability to concentrate on or retain material, uncertainty as to why they should learn, and lack of self-confidence.

Underlying the approach to the three-week skills course was the assumption that 1) the language functions of reading, writing, speaking, and listening are the really crucial areas when considering the skills required for success in college; 2) the basic language functions are interrelated to the extent that a change in one tends to effect a change in the others; and 3) the development of language functions is impeded by a low rate of fluency in any one or a combination of the functions (*10*). Therefore, it was decided to place a heavy concentration on these language skills preceding the regular college course work.

All of the students in Project Transition participated in the three-week skills course. This course consisted of one hour of group instruction each day in various study skills, vocabulary development, and other reading, writing, speaking, and listening skills. During the hour, skills were introduced, discussed, and practiced briefly. After a short break, the students went into small laboratory sessions and worked on the various skills which had been introduced in the previous hour. There were ten students in each lab. The materials used were Pauk *(8)*, Braam and Sheldon *(2)*, Lewis *(5)*, Altick *(1)*, and Hill *(4)*.

In the labs the students worked on their own. The instructor gave assistance where needed and encouraged application of the skills to real college situations. The lab sessions were three hours in length with a break at the halfway point. The labs were flexible, which permitted each group to approach the task in a way that appeared to offer the best results for them. There were brief checkup tests every day or two and a final test at the end of the third week.

At the end of the three-week study skills course, the students were placed in two regular college courses selected from English, sociology, and speech. This placement was made on the basis of test scores from the standardized tests administered before the program began and on performance in the three-week skills session.

Weekly seminars were held in the afternoon during the last six weeks of the summer. At each of these meetings one of the divi-

sion heads explained his division and how it related to other divisions in the college. He then answered questions related to the division, e.g., major or minor requirements, employment opportunities, etc.

The students met for two hours each evening with a regular faculty member for help with course work and discussions aimed at changing attitudes and self-images. There were six faculty members who served in this way, making it possible to have a one to five faculty-student ratio. These meetings were informal and students were permitted to go from one group to another if they felt that what was going on in the one was more applicable to them than what was in the other.

Counseling sessions were set up on four days of each week. These were both individual and group sessions. In the first two sessions the student was informed of his performance on the tests and inventories which he had taken. He was given an honest appraisal of his potential in relation to his stated interests. In the following individual sessions he was kept informed as to how his performance was related to expectations. In the group sessions various aspects of college life were discussed along with any personal or group problems which the participants cared to reveal. These sessions were conducted by the director of the project and a clinical psychologist.

The results of the project were encouraging. When the average grade point average attained by the participants was compared with the predicted grade point average based on self-reported high school grades and ACT scores, the participants' grade point average exceeded the predicted grade point at a better than chance level. The group as a whole, with a predicted GPA of 1.5, achieved a GPA of 2.2 in the summer and 2.0 in the fall (GPA is based on a four point scale).

During the summer, ten of the students were able to achieve much higher grades than would have been expected. The predicted GPA for these ten students was 1.8, while the achieved GPA was 2.7. By the end of the fall semester, only four of the students were able to attain a GPA significantly higher than their predicted GPA. For these four students the predicted GPA was 1.7 and the achieved GPA was 2.8.

While averages are interesting, they do not reveal the entire

picture. It seems much more sensible and important to look at individuals. Time will not permit a look at each participant; therefore, one representative of those who succeeded and one representative of those who made the poorest showing were selected as examples.

Joe M. had not anticipated going beyond high school. Upon graduation he found employment in a dry goods store and soon found the low status and long hours depressing. He also felt a need to make a greater contribution in life, perhaps as a teacher in secondary education. Given his late blooming interest in a college education, he felt that Project Transition represented his only chance to succeed. He applied himself to his work more seriously than most of the students. The members of his laboratory group were amazed to find that he was only nineteen; they had guessed his age as twenty-five.

Several times during the summer, Joe became quite depressed over his imagined lack of progress and at one point seriously considered dropping out. When his chance to make an *A* in one course was pointed out and he was told of his status among the instructors, he decided to stick it out. He had the highest average among the Project Transition students and seemed determined to continue above average work throughout the remainder of his college career. His predicted GPA was 2.0, his actual summer GPA was 3.6, and his fall GPA was 3.0. He took the program seriously, surprised himself with his success, and assumed an attitude of anticipated success, rather than anticipated failure.

In contrast was the case of Paul L. From the time Paul was in junior high school he had a large responsibility outside of school. His father had died, leaving him many responsibilities on the farm which had to be taken care of before and after school. He felt his teachers did not understand him or care about him. He came into the program at the insistence of his mother rather than from a deeply felt need within himself. He developed an attitude early in the program similar to the one he had had in high school. On several occasions he sought out the director of the program and indicated that he felt no one was concerned about him and that the instructors graded him down not because his work was inferior but because they disagreed

with him on his point of view. After each of these lengthy sessions he would vow to do better and to "show" the instructor that he was capable. However, this vow was short lived—his instructor would report the next day that he had slept during the entire class period. Paul completed the summer's work with a GPA of 0.1 for 7 hours of work and needless to say did not return in the fall.

Both Joe M. and Paul L. had average IQs. The major difference between them seems to be in their perception of the program and the change or lack thereof in their self-image.

These findings corroborate those of Pitcher (*11*) who has said, "If it is true that nothing succeeds like success, is it also a fact that nothing fails like failure?" Pitcher goes on to say, "The disaster of the young people who fail in academic tasks is that frequently the failure reinforces negatively the entire way they perceive themselves and their world. Consequently, they take this damaged view of themselves along everywhere."

In each case in Project Transition where the student did average or better academic work there was a dramatic change in self-image. The data indicated that the most important factor or skill needed by an underachieving college bound senior is a change in attitude toward self and the academic world. The participants who were able to develop a perception of themselves as successful college students were succeeding. Those who showed little or no change in their perception were in academic difficulty. These findings are in agreement with those of several other colleges where similar programs were conducted. Pervin, Reik, and Dalrymple (*9*) state that the underachieving student is locked in ". . . an achievement oriented meritocracy which places heavy emphasis on academic excellence measured by grades, skill in taking examinations, and finding solutions to problems set by others." The personality of the achievement oriented person bears little resemblance to that of either the creative person or the underachiever. Persisters are more academically and intellectually oriented, have more reasons and a wider variety of reasons for college choices, and do a greater amount of studying. Meeth (*7*) states, "It is evident that one of the strongest differences between persisters and withdrawals is that the withdrawals do not fit the academic mold and the persisters do. The

motivational factors which allow the persisters to complete an undergraduate education have a great deal to do with understanding and persisting in the *system* of American higher education."

It would appear that students who are similar in background to those who participated in this program can succeed in college if they are willing to accept the responsibility for motivation, discipline, and study. Skills are not enough. Programs aimed at salvaging the underachiever must be structured in such a way as to encourage and provide an opportunity for the students to help themselves. Admission to this program was based on a sincere desire to study in order to meet college entrance requirements. The program placed the responsibility for study on the student. The supervision by the faculty and the periodic evaluation of progress was conducted in such a way as to challenge the students to discipline themselves to meet assignments. Obviously, this type of program will not help all students with all of their problems, neither will it guarantee that a student will not fail at some future date. However, this program and similar ones at other institutions are helping many young students to improve their academic performance, making it possible for them to enter regular college courses and continue their education. "One of the big questions facing institutions helping underachievers seems to be whether or not these students should be accorded special attention or treated in the same manner as all other students" *(7)*. Each approach has problems; students and institutions are divided on the issue or take both positions simultaneously. While there is danger in either approach, the results of this project seem to indicate that these students not only should receive special attention but that they must receive it if they are to succeed in the academic world.

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